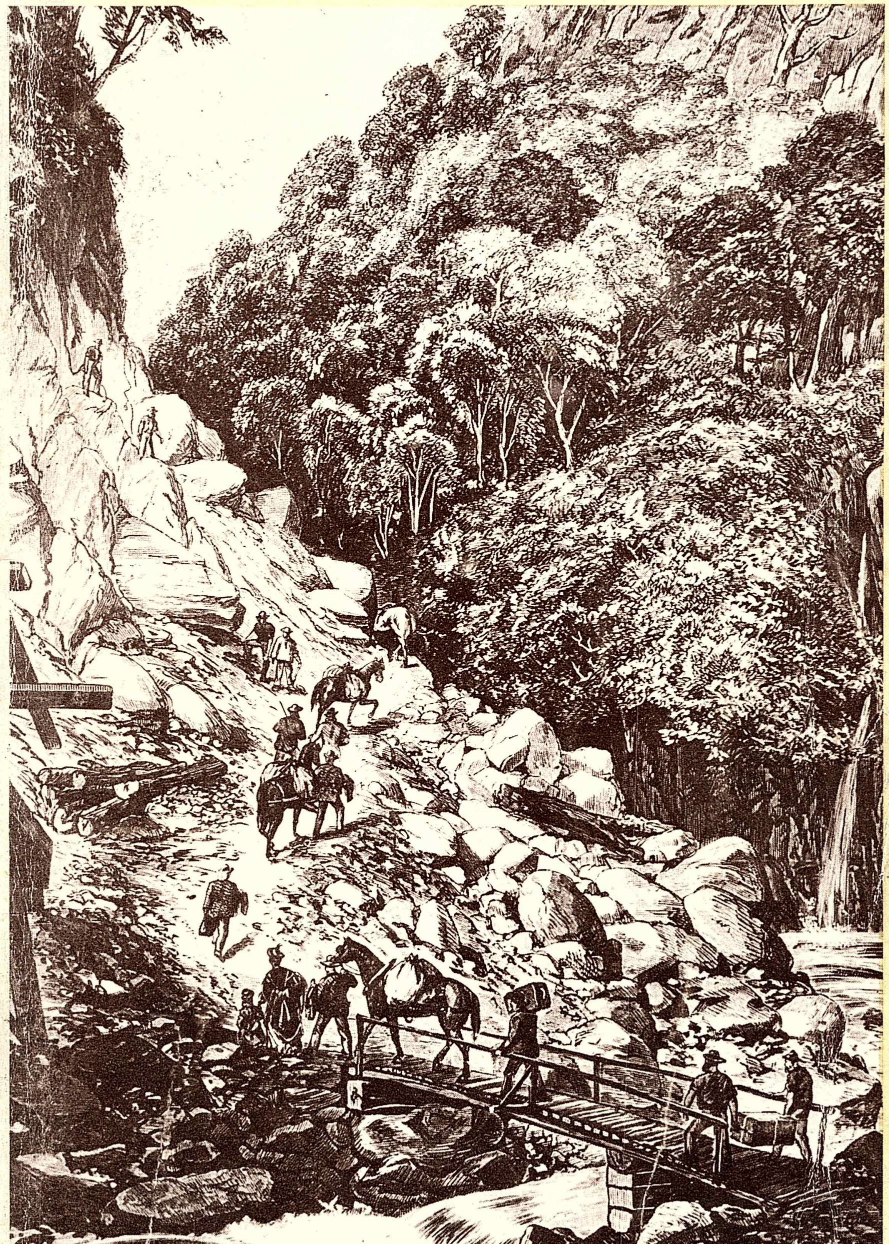
Arthur's Pass National Park



Front Cover:

Wallace's Point, Otira Gorge, Packing mail and luggage round a slip, 1875.

Alexander Turnbull Library

HANDBOOK
to the
ARTHURS PASS NATIONAL PARK

published by the
ARTHURS PASS NATIONAL PARK BOARD

Editor C. J. Burrows

Third (Completely Revised) Edition 1974

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FOREWORD

The Arthurs Pass National Park handbook sets out to describe, as far as is possible within the limited span of its pages, the character of this mountain area in the centre of the South Island. This is the third handbook to be published for the Park. The first was edited by R. S. Odell and published in 1935 and the second, edited by L. W. McCaskill, in 1960. The old handbooks are valuable reference works for they contain material which was not included in the new handbook.

National Parks are areas of natural beauty and grandeur, little modified by the hand of man. They are sanctuaries for plant and animal life and play a very important part in the life of the people of New Zealand as places for physical and mental recreation. Parks are important in the education of people, and, particularly the youth of the country. Young people are given every opportunity and encouragement to visit and to study facets of natural science here and, by contact with the mountains it is hoped they may also acquire worthwhile ethical values. The work of Park rangers with interpretative programmes and of others who assist in these educational projects is of considerable importance. Parks are significant too as sites for study by professional scientists.

Their main use, however is by the thousands of laymen who visit them, enjoying the scenery and the outdoor life. The setting up of National Parks was an idealistic conception which has borne fruit in the present popularity of the Parks system.

Yet Parks are not only for people, for the National Parks Act stresses the part which the Parks should play in conservation of soil, water and vegetation and preservation of the native plants and animals. This conservation role is epitomized in the setting aside of Wilderness areas where no development is permitted. The remote Otehake Wilderness area includes some of the most rugged and beautiful terrain and some of the most interesting vegetation and wildlife in the Arthurs Pass National Park.

The care and welfare of this Park depends not only on the work undertaken by the Park Board and by the Park Rangers but is very much the concern of ordinary visitors. They can help by ensuring that the natural environment is retained as far as possible in its present state and that park values are respected and protected.

The Arthurs Pass National Park Board invites the people of New Zealand to share its enjoyment of this very important part of their national heritage.

G. MOLLETT, Chairman 1974

THE LANDSCAPE

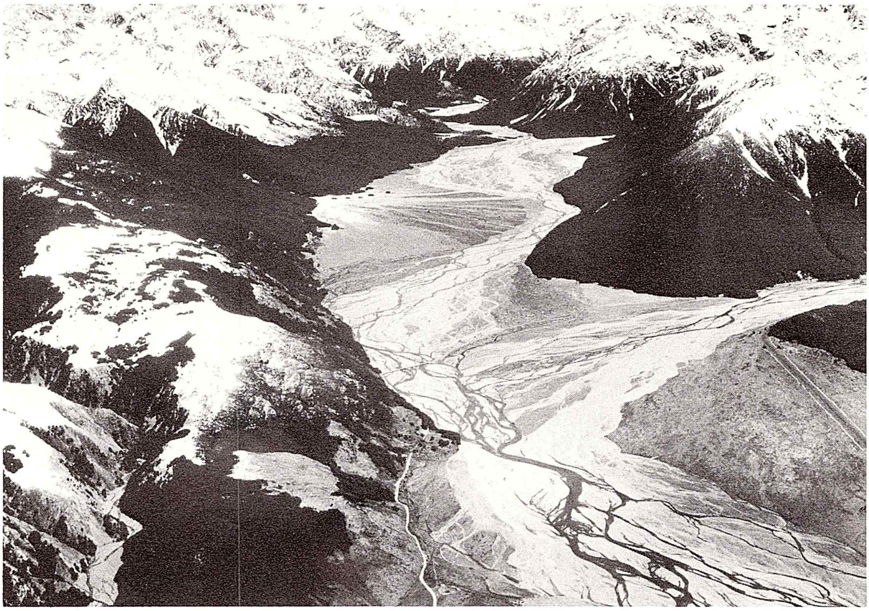
"... . the jagged hills
Sentinels shoulder to shoulder
Guarding their citadels"
James K. Baxter.

The Arthurs Pass National Park is a rugged and mountainous area of about 100,000 hectares, situated in the centre of the South Island. It is a land of jagged skylines, tall snowy peaks and snowgrass-clad ridges, deep gorges, steep, bush-covered hillsides, sheer cliffs of angular black rock, high waterfalls, wide shingle riverbeds and rushing torrents. The Park is traversed by large rivers; on the east the Waimakariri and Poulter and their tributaries, the Taramakau and Otira and their tributaries on the west.

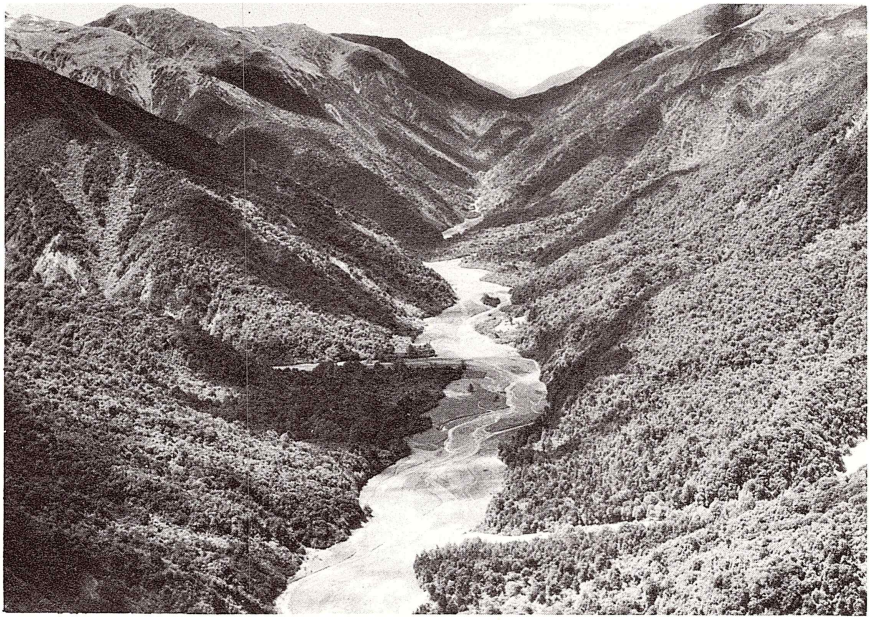
Most people regard the Park as a region of abundant forest cover, but the impression gained from the valley floors is somewhat misleading, for the area of mountain ridges above bushline approximately equals the forested area. From valley floors at about 700 m on the east the peaks rise to 1800 m or more, but the western valley floors lie at only about 300 m or slightly more. From any of the high peaks there are views over ridge upon ridge of broken rock, with snowfields lying beneath them and deep-cut valleys below. Ten named peaks over 2100 m in height and twenty-one over 1800 m lie within the Park.

The main divide of the Southern Alps bisects the Park and from it branch intricate ranges of mountains between the courses of the rivers. Part of the Park, thus is in Canterbury, part in Westland. Between the peaks are many passes, high and low, but nearly all of them difficult to cross. The western and eastern separation has a dominating influence on the character of the Park as we shall see; but the rugged terrain, the wide range of altitudes, the relatively severe mountain climate, the swift rivers and the passes all affect the nature of the Park in various ways.

It is impossible to capture the Park in a few words, even with the help of the illustrations and descriptions unfolded in the following pages. A few brief sketches must suffice to illustrate the variety of beauty and grandeur which it is possible to find. It is hoped that all Park visitors, whatever their interests, will be able to benefit from the peace and serenity to be found in mountain solitudes.



The Upper Waimakariri Valley, with Klondyke Corner in the middle and the Bealey valley on the right. Bealey Spur in left foreground. V. C. Browne



The Upper Taramakau valley and Harpers Pass in summer, looking east. V. C. Browne

A First View of the Park

For many visitors, if they journey from Canterbury through the dry, brown hills of the middle Waimakariri basin, there is a striking first view of the Park from Goldneys Saddle. Deep blue-green bush-clad slopes of the Hawdon Valley, and Upper Waimakariri Valley lie above tawny tussock flats. Grey riverbed, laced with braided streams, contrasts with glimpses of glistening snow on the peaks, and further up-valley, little glaciers perched on the shoulders of the mountains.

The Otira Gorge

The gorge is always impressive. Vertical or near-vertical cliffs, bristling with scrub and forest plunge down to the depths of the valley. Nearby, along the road, the flora is rich, changing with every mile. In late summer the scarlet-flowered rata with its dull-green foliage is set alongside the lighter green tones of totara, broadleaf, olearia, ribbon wood or curled-leaved nei-nei. Each zig and zag of the spectacular road brings a new vista.

The mood changes with the weather. The spectacular scene is enhanced by cloud drifting up the hillsides after a storm when greenish flood-water pours noisily down the narrow channel and dozens of white rivulets foam down every slope.

Lake Kaurapataka

The lake is a little gem, its greenish water still, reflecting the surrounding scene. A few scaup and a grebe ripple the surface. The forest, with gnarled kamahi trees, giant red beech, tall, stately matai and rimu trees and graceful treeferns, descends to the water's edge. Epiphytes cover every tree trunk and branch and the ground is carpeted with ferns and an underfelt of smaller plants. The only sounds to break the silence are the muted noise of streams, the whir of a pigeon's wings, a tui's harsh first note and its melodious successors.

The Ridge of Mt. Oates

The season is autumn and the air crisp. Down below on Goat Pass a cold wind streams from the west, thick with moist cloud, but above it the air is still and the reflected sun sparkles on a shining bed of snow. The peaks all round project from a billowing layer of cloud. It is tempting to sit on the rock absorbing the warmth and the stillness. But as the shadows lengthen it is time to descend to the boulder-fields, the blue, rippled surface of Lake Mavis, the snow-grass slopes and the fog in the valley below.

Climbers. *N. M. Adams.*

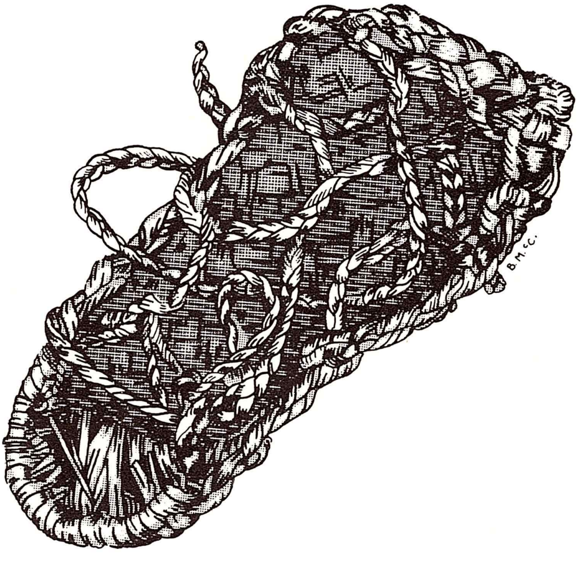
HISTORY

Only fragments of the full and interesting, sometimes romantic, history can be given here.

EARLIEST MAN IN THE PARK

The Ngai-Tahu Maori people travelled through the Park in small parties mainly by way of the Hurunui Saddle (now Harpers Pass) on journeys between Hokitika or Arahura or Mawhera (Greymouth) and Kaiapohia on the east. Only occasional use was made of Arthurs Pass because of the difficulty of the crossing especially from the west.

Trade in precious greenstone, found only in the Taramakau and Arahura valleys, was one important reason for crossing the divide passes, but some of the journeys were for social occasions.



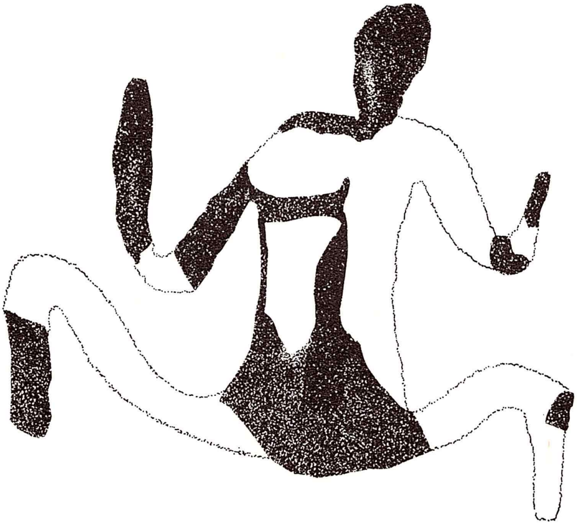
Sandals such as these, usually made of flax *(Phormium tenax)* were worn by Maori travellers on long journeys or over rough country. B. McCulloch

A small temporary kaika, (settlement) used in the 1820's and 30's, was sited in the bush in the Otira valley near the Taramakau and there was a camping place, Whakamoemoe, near the head of the Taramakau. West of the old Bealey hotel site several umu (stone ovens) were once present.

Travel in the mountains was difficult for the Maori. They wore flax mats and capes and flax sandals and, although they could carry some preserved food (wekas, dried eels, dried whitebait and dried fern roots) they must collect fresh food en route. Fruits and fern roots, eels from Lake Kauru-potaka (Kaurapataka, a favourite spot), and birds such as pigeons, kakas, wekas, orange-wattled crows and blue ducks were gathered. The birds were captured using snares.

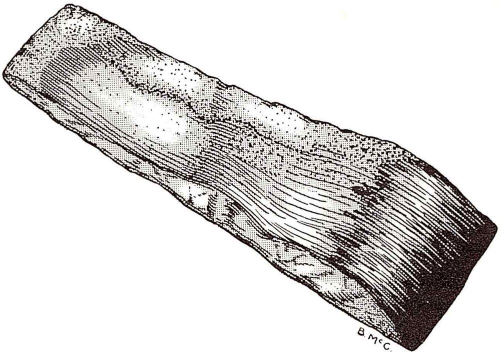
The crossing of flooded rivers was a problem but the technique was used of carrying a heavy pole at chest level, in a line parallel with the flow of the stream, to brace the party against the current. Up to ten people crossed at a time. This is still the best method for crossing the swift rivers in the Park.

Earlier occupation is evident near the Hawdon River where charcoal in the soil shows that the forest was burnt a few hundred years ago, probably by hunting parties. Charcoal drawings on the walls of limestone overhangs in the Castle Hill Basin, and the bones of moa which had been cooked and eaten, may date from the same period.



Early Polynesian rock drawing from Castle Hill, executed in charcoal about 500 years ago.

B. McCulloch



A small adze of an early type, possibly dropped by a hunting party near Otira.

B. McCulloch

EUROPEAN SHEEP-FARMERS' EXPLORERS AND THE GOLD RUSH

In the mid-nineteenth century European settlers looking for sheep-country and others searching for passes from Canterbury to Westland, or prospecting for gold, began to explore the land which is now the Park.

C. O. Torlesse, a young surveyor, climbed Rubicon Peak of the Torlesse Range with a Maori guide in January, 1849. His account of the Waimakariri basin — "a romantic and chaotic mass of mountains to the westward — the main ridge of the island, capped with ever-lasting snows" is the first description of the Park.

The eastern fringes of the Park were seen at closer quarters by J. Pearson who, with W. Sidebottom, explored the middle Waimakariri basin as far as the Cass district in 1857, looking for sheep country. They burnt the vegetation as they went and the smoke of their fires was visible on the Plains. It is unlikely that much forest was destroyed at this time, however.

On Pearson's recommendation a group of emigrants from Australia, experienced sheep graziers, took up the runs in the area: J. C. Hawdon, Grasmere; J. C. Aitken, Riversdale; E. C. Minchin, Lower Poulter and T. W. White, Mt. White. Before they occupied the area C. O. Torlesse and F. Revell who had been hired to explore the area by the Canterbury Provincial Government, rode into the Castle Hill Basin in February, 1858. They crossed the Waimakariri near the present Craigieburn Station to the foot of Mt. Binser, then continued up the flats in the main river. They left their horses, probably at the White River, and walked to "nearly the head of the Courtenay (Waimakariri) or where it issues from the main range of mountains". Torlesse's map shows that they travelled to near the Waimakariri Falls. A week later they travelled up the Poulter and tried to reach Worseley Pass, but were thwarted by the thick vegetation, bluffs and a gorge.

The Hurunui Saddle was crossed by Edward Dobson (The Canterbury Provincial Engineer) and the runholders, G. Mason, H. Taylor and C. E. Dampier in September, 1857, when, during their investigation of the Upper Hurunui valley, they travelled a short distance into the Taramakau watershed. In November of the same year 20-year-old Leonard Harper and a man named Locke were guided over the pass by Ihaia Tainui and three other Maori from Kaiapohia. They traversed the Taramakau valley to the coast and later returned across the pass with Tarapuhi, chief of the Westland Maori. Harper experienced difficulty with bad weather, rivers and the Westland bush. Considerable credit must go to the amiable Maori folk of Kaiapohia and Westland for their assistance to the Europeans in travel in the area. Advice was given about routes (often in the form of sand-drawings showing rivers as deep furrows and mountains as hillocks), river-crossing techniques, methods for catching birds and eels and the general art of living in the bush. Some of the ill-equipped explorers of this difficult land lost their lives and many more would have starved or drowned without the help of the Maori.

The sheep stations in the Hurunui Valley near Lake Sumner and those near Cass became important staging posts in further travel in the area. Furthermore the runholders and their men, in the course of their work and in their search for new grazing, explored thoroughly the valleys and some of the mountain ridges. Some of the passes (Walker, Worseley) were visited by these men and some of them probably saw Arthurs Pass before Samuel Butler noted it when he rode up the Waimakariri in 1860.

We must abbreviate the next section concerning activities near the Hurunui Saddle.

Late 1858 Edward Dobson's party cuts track to saddle.

Feb. 1859 J. Rochfort party surveying in Taramakau.

May 1859 Rochfort, J. and A. McKay cross to Westland to purchase the area from the Maori.

Oct., Nov. 1862 H. C. Howitt and party prospecting for gold in the Taramakau. Slab hut built on the Canterbury side of the saddle.

Early 1863 Howitt and party cut horse track over the saddle. J. C. Drake surveying.

A few hardy prospectors like William Smart, Charles Money and R. Davies and some Maori parties crossed the Saddle to prospect for gold in the Taramakau Valley in early 1864. Smart describes some of the difficulties in traversing the river. "The travelling is very rough as we have to follow the shingle beds, or rather boulder beds until we are again compelled to cross the streams where the spurs from the ranges come down to the river in precipitous bluffs, all dense bush, thick undergrowth of vines and supplejacks, tutu trees a foot in diameter, mosses and ferns of great variety".

Smart also lists the stores and equipment which he and his mates carried on their backs . . . "tent, two flys, clothing, blankets, pick, shovel, tin dish, frying pan, gun, 14lbs shot, 2lbs powder, caps, bacon, tea, sugar, 200lbs flour, salt, matches, candles, a few nails — nearly 1 cwt each (man)." As much as they could the early travellers lived off the land by shooting or trapping birds and fishing for eels.

When a payable gold strike was made at Greenstone in the Taramakau valley in July 1863, the feverish traffic of would-be diggers, pack-horse supply trains and drovers with mobs of stock for the diggings began.

Arthur Dudley Dobson, surveying for the Canterbury Provincial Government in the almost trackless Westland forests, had learned from the Westland Maori of the pass at the head of the Otira valley. He thought that his supply problems might be alleviated by a more direct route than the difficult and long Hurunui Saddle track or the dangerous sea route. His plans accorded with the wishes of the Provincial Government.

In February 1864 Arthur, aged 23, and his brother Edward (18) left Goldney's Station at the Cass River.

"The next day we rode up the river-bed until we came to a large stream running into the Waimakariri from the north-west. We camped in this valley at a point beyond which we could not take the horses. Next morning we went up the stream as far as it was possible and then through the bush at the side, cutting our way with billhooks. It was hard work, and though we had very light swags, it took the greater part of the day to get out of the bush into the scrub, where we found we had arrived at a swampy valley about a mile in length which evidently had once been the bed of a glacier. We pitched our tents in the scrub and had a good meal, then went on to the end of the flat where we found the moraine which had blocked the north end of this valley. The barometer registered about 3000 ft above sea level. This was evidently an available saddle with very little difficulties on the east side, the heavy work would be on the west side, where there was a very precipitous descent into a long narrow gorge, the head of the Otira river. (At the time, they thought it was the Arahura). The view was very beautiful looking up the forest-covered hillsides to the snow-capped mountains on the north side of the Taramakau. The rata was in full bloom and its red blossom made a brilliant contrast to the dark foliage of the birch (sic) trees. We found the descent from the moraine for the first 500 feet exceedingly steep but there was sufficient width in the valley to allow a zig-zag cutting to be made into the head of the gorge, beyond which a good deal of heavy rock cutting would be required to make a dray road . . ."

"I was at once satisfied that it would be impossible to get horses down the gorge without road-making, so I abandoned the idea of attempting to take horses through by this route and decided to take them over the Hurunui saddle. We now returned to

Goldney's station. Mr Goldney was very anxious to know if their would be any chance of finding sheep country. I agreed to return to this saddle with Mr Goldney and a man named Marshall. We started the next morning, followed the route that I had taken before, riding as far as the horses could go and then pushing on through the bush. In this way we got down into the gorge where the difficulties began. There was a drop of thirty feet with vertical sides;to go down itwe cut a number of lightpoles and lashing them together with flax, made a sort of rough ladder down which we climbed. Goldney's sheep dog could not manage the ladder so we lowered him down with a flax line. The remainder of the gorge was very bad travelling, with deep holes and large rocks and in several places we were nearly afloat. We reached the junction of the stream coming in near the present tunnel mouth and camped on the flat. Next day we spent in climbing the mountains on the west side of the stream, in the endeavour to see if there were any signs of open grass country. We did not see any, as none existed. It came on to rain heavily in the night and the next day we found there was far too much water in the stream for us to return that day. The rain ceased in the night and the following day we were able to go up the creek, though it was very difficult travelling . . ."

(Extract from "Memoirs", A. D. Dobson)

Dobson climbed some of the ridges on the pass, made sketches and a map and handed it and a report, to the Chief Surveyor. Mt. Rolleston, the Bealey River and numerous other features are marked on the map.

The gold strike in Westland hastened the search for the most direct line from Christchurch to Westland. In February 1865 George Dobson, (brother of Arthur) and two others, under warrant from the Canterbury Provincial Government to examine the Bealey-Otira line as a feasible route for a road, travelled down the Otira Gorge. One man deserted them for the diggings and Dobson and Russell returned up the Deception River to "Goat's Pass" and down the Mingha. Dobson in his report considered "Arthur's Pass" to be impractical as a road line and from this report the pass took its name.

A major search now ensued in March and April 1865 to find a pass from the Waimakariri to Westland which would be suitable for roading. Edward Dobson senior was instructed by the Provincial Government to examine the area carefully.

March, 1865. Edward Dobson and George, his son, explore the very difficult Otehake gorge over Walker Pass, almost certainly the first men to do so.

J. S. Browning and E. J. Cahill, in the upper Waimakariri, find Campbell Pass. E. Dobson and J. Smith in the latter area. Smith reaches the snow-covered Waimakariri Col.

G. Dobson, an energetic and adventurous young man, crosses the divide from the Thompson branch of the Poulter River and returns to the Waimakariri via the Taramakau and Otira Valleys. He then examines the White and Taipo-iti and later Worseley Pass.

J. E. Fitzgerald, Browning, Cahill, R. J. Harman, R. R. Armstrong, J. J. Johnstone and Captain Anderson take a coach from Goldney's station up the Waimakariri riverbed to a point beyond the Crow. They find Harman's Pass.

All these efforts confirmed that no other feasible transalpine road line existed in the area and Edward Dobson decided to cut the road over Arthurs Pass. He set the contractor, J. Smith and his men opening up a horse track "as fast as thirty good axemen can cut their way through the dense scrub." He pointed out that "many serious difficulties presented themselves on both sides of the ascent".

Harpers Pass, meanwhile, was the main line taken by the early gold rush traffic. The best early description of the scene and the terrain is that of Julius von Haast, the provincial geologist, who travelled through from Canterbury in March 1865. There was "an endless train of gold-diggers with pack horses, packers driving horses before them and even women walking stoutly along by the side of their husbands . . . Travellers on foot with heavy packs on their backs and shovels and pickaxes in their hands . . .", ". . . pedlars taking provisions on pack horses, herds of cattle driven by stockmen on horses and all going in the same direction . .

At Howitt's blockhouse below Harpers Pass there was a storekeeper "who was doing a very good business but complained that his profits were very much lessened by the numbers of half-starving people who returned without any money . . . Several parties of returning diggers passed during my stay here, most of them ragged, starving and without money, real pictures of misery".

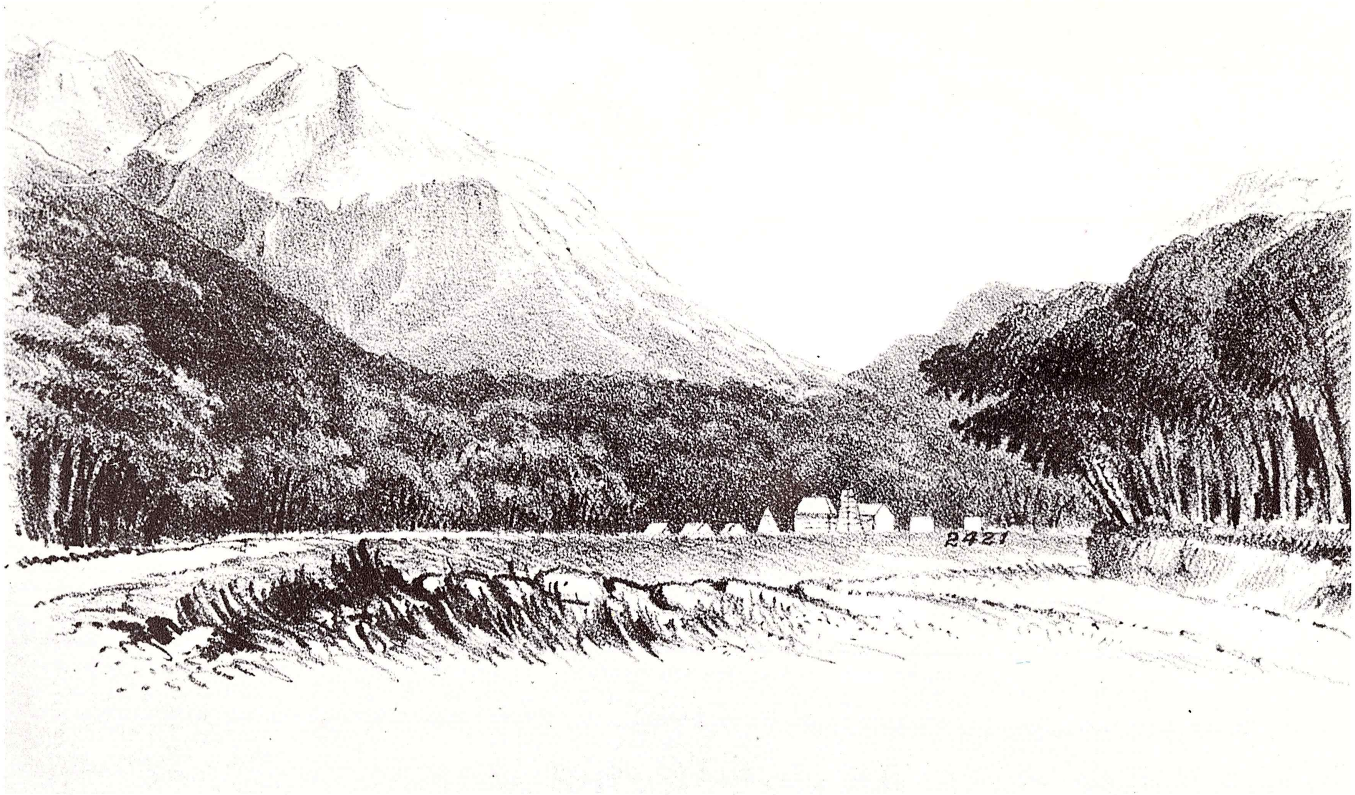
Mrs Nicholas Chevalier, riding over Harpers Pass in 1866 with her husband, the artist, records her list of stores and equipment "a tent, provisions in saddlebags, the billey (a tin pot for boiling the water) and the three panikins (tin cups) . . ." The stores included "tea, sugar, flour, rice, hard dried meat they call junk and a little butter". "I was restricted to a small American cloth (oiled silk) flat bag that would strap on my saddle and fastened to the girth . . . I had a change of linen, a thin silk dress . . . a pair of slippers. I had a good, strong but short habit and good riding trousers and shady hat . . ."

Haast described very well the vegetation, scenery and geology on his ride over Harpers Pass and on a later trip in a dog cart over Arthurs Pass. He was impressed, as were Mrs Chevalier and other travellers, by the bad state of the trail over the top of Harpers Pass. Approaching the Pass from the east "The road which till now had been tolerably good began to be almost impassable in consequence of the great traffic on the narrow bridle path and resembled a morass canal; sharp stones, roots and dead timber made progress very difficult; the horses sank up to their knees and could only work themselves out with difficulty". Across the summit Haast and his men began to lead their horses. "The unparalleled bad road led rather steeply downwards, either over smooth, slippery blocks of rock or through pools of slush full of roots and large and small stones over and between which the poor horses tried to pick their way, panting and trembling and often sinking up to their girths". It was a relief to reach the more open Taramakau riverbed 1300 ft below. Lower down the river they had to swim their horses through the swollen stream.

The droving of numerous cattle and sheep over the pass had contributed to the bad state of the trail. C. D. Crossley had taken the first mob of sheep over in 1864 but in 1865-66 some 4,400 cattle had been driven through.

The difficulties of cattle droving in the rain and mud are well described by E. R. Chudleigh in his "Diary".

A mail run by horseback was started from Christchurch across the Pass to Mawhera in 1864 by a Maori, Mutu, and several other Maori were undertaking a freight business by packhorse and canoe. The mail run was transferred to Arthurs Pass when the horse track was through in 1865.



Surveyors' camp at "Camping Flat", site of the present village of Arthurs Pass,

Lithograph (? by E. Dobson)

THE TRANSALPINE ROAD, SETTLEMENTS AND THE COACHING SERVICE

"The coach goes swinging along in style —
Horses the pride of the mountain land
A champion whip with the ribbons in hand;
Life is a jest and the world a smile
While we're rolling westward mile by mile."
D. McKee Wright

As soon as Edward Dobson reported that there was no better pass than "Arthur's" the Provincial Government approved the formation of a metalled road and work began. A thousand men with axes, picks, shovels, crowbars and wheelbarrows, rock drills and explosives were employed, working in great difficulties in the bitter winter of 1865, but the road was completed from Christchurch to Hokitika in 1866 at a cost of about £145,000. The road, particularly the section down the Otira Gorge, where, "In some places the cliffs are scarfed out for a portion of the width of the road, the remainder being carried on timber brackets in the fashion of Trajan's celebrated road on the bank of the Danube; in others the line is carried across ravines on embankments faced with walls made of timber cribbing, filled with blocks of stone", must be regarded as a major engineering feat and one of which the young colony could be proud. Arthur Dobson was closely connected with the construction of the Westland portion of the road.

Immediately the Arthurs Pass road was pushed through, traffic over Harpers Pass slowed down to a trickle. The Otira road was, at first, suitable for drays but soon was made ready for a coach service. The famous firm of Cobb and Co., represented in New Zealand by L. G. Cole, established a passenger and mail service in 1866. We will come back to this later.

The overland telegraph was also established in 1866 and the road was enlivened by more traffic to the diggings and large mobs of stock. Some 40,000 sheep and 25,000 cattle were driven over the Pass that year to feed the hungry gold-miners. Bruce, the runholder at Cora Lynn (from 1867) also held land at Inchbonnie on which the stock were grazed.

The sheep runs on both sides of the divide were occupied by vigorous men who attempted to make use of every bit of available country for grazing. The dense bush was a hindrance to farming in the Otira valley. The flats in the Waimakariri and much of the Poulter valley were natural grasslands or had been cleared by Maori fires but the hillsides were densely wooded. The scrub on Arthurs Pass was burned and the flat between Lake Misery and the boggy tarns at the top of the Pass used as a holding paddock. In the Taramakau Valley the wide riverbed, originally forested except for the main channel, was also cleared by fire. So also were the intractable forest of the Otira valley and much of the forested hillsides from Bealey Spur to Anticrow. Sheep and a few cattle were grazed on these cleared areas but sheep were also taken up bush tracks to the Kelly Range, Hallelujah Flat in the Andrews, to Woolshed Hill, the Poulter Range, the Mottram Peaks, and the Jordan tops. Grazing of the Jordan tops has only recently ceased. There is no doubt that these activities have modified the vegetation and led to some of the weed problems of the Park.

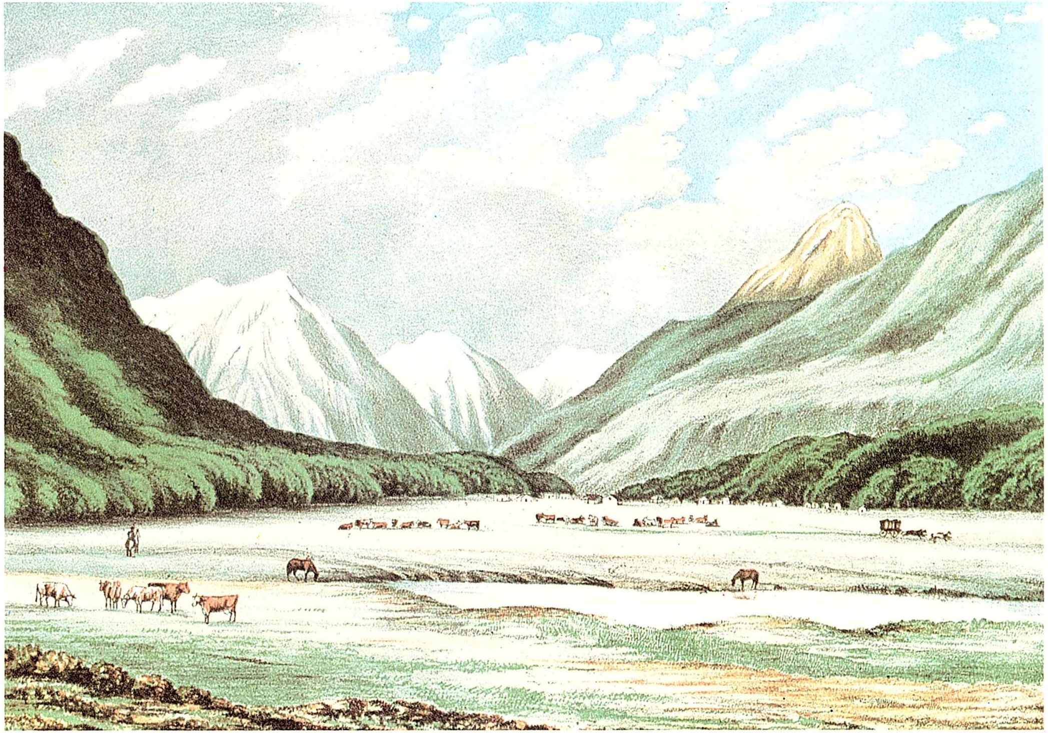
Early settlement along the road in and about the Park was almost solely for the construction and servicing of the road and telegraph line. The ephemeral Bealey Settlement at Klondyke Corner sprang up in 1865, grandiosely laid out in a street plan with names such as Albion, Caledonia, St Andrew and St Patrick Streets. Julius von Haast described the newly-founded township. "Several houses had been built, either constructed from logs or covered with zinc or weatherboards, which, together with a good array of tents, indicated that a number of people had already congregated here. In fact, there were more than a hundred inhabitants who intended to settle in that locality whilst a considerable number of diggers and navvies passing to-and-fro made it their usual resting place. At the same time, several parties of sawyers were also at work, preparing timber for a number of buildings still to be erected". Some of the inhabitants included carters and a blacksmith and there were shops for basic groceries, meat and grog.

Nearer Arthurs Pass, at Camping Flat on the site of the present township, J. Smith the road contractor had his camp and Wright, the contractor on the western side, was camped on Pegleg Flat.

Only 18 months later (1867) Julius von Haast found the Bealey settlement almost deserted except for a telegraphist at the Post Office and a Sergeant of Police. The post and telegraph facilities were shifted to the site south of the Waimakariri River which also became the locality for the accommodation house.

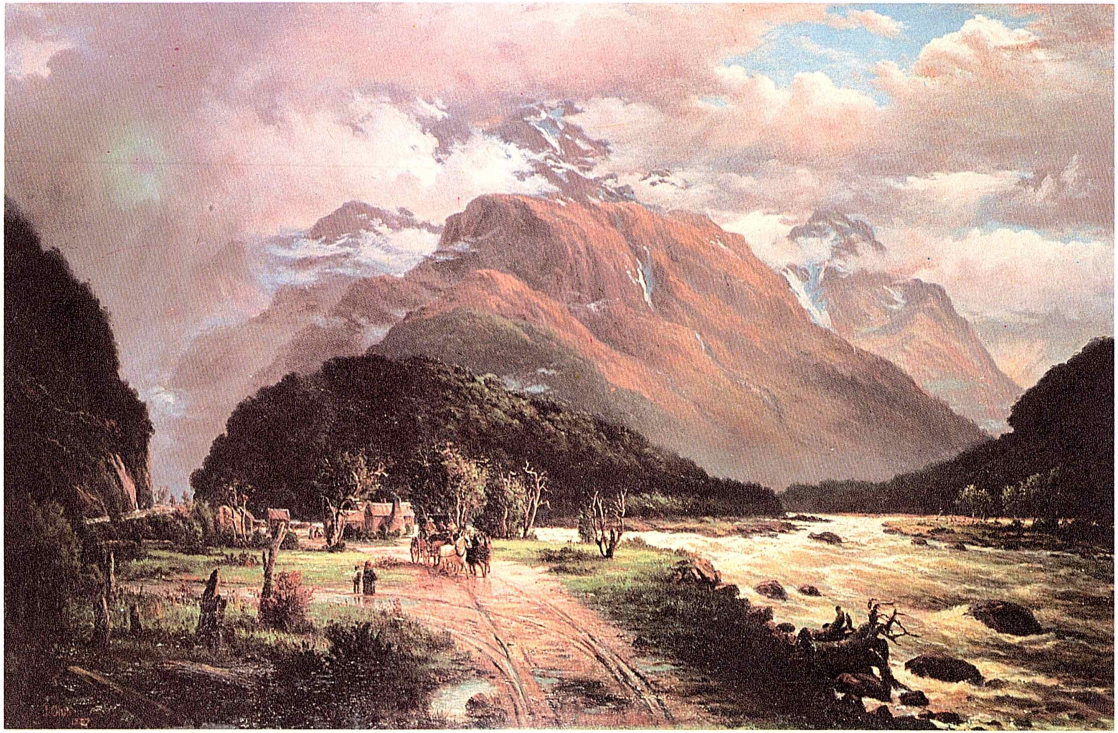
The accommodation houses, little oases in the wilderness where a traveller could find a bed, food and drink, were a mixed bag. Gerhard Mueller, in 1865, describes one at Aickens thus: "We pulled up to an Accommodation House on the banks of the Totara (Otira) River, kept by men of the name of (Alexander). We got a bunk between us and beastly uncomfortable it was. This Accommodation House is one large tent, with a fire place made of piled-up stones. At the extremity is the bar or counter. The provisioning to be got here consists of flour, tea, bacon and sugar and the drinks of old Tom. On both sides are bunks — each bunk to hold two mates, and three of such double bunks above each other in ship fashion. The bunks are made of round sticks and on these you recline . . . for the night".

Mrs Chevalier and her husband, in 1866 also found rough shelter and fare at Jacksons. They had to sleep on bare boards in a lean-to shed just beside the bar. At first they were disturbed by the rowdiness of the drinkers in the bar and then, when the bar closed, their bedroom was invaded by a horde of rats. Later, returning over Arthurs Pass the Chevaliers rode up the corduroy road in the Otira valley and received better treatment at Rays (?Wrights) ac-



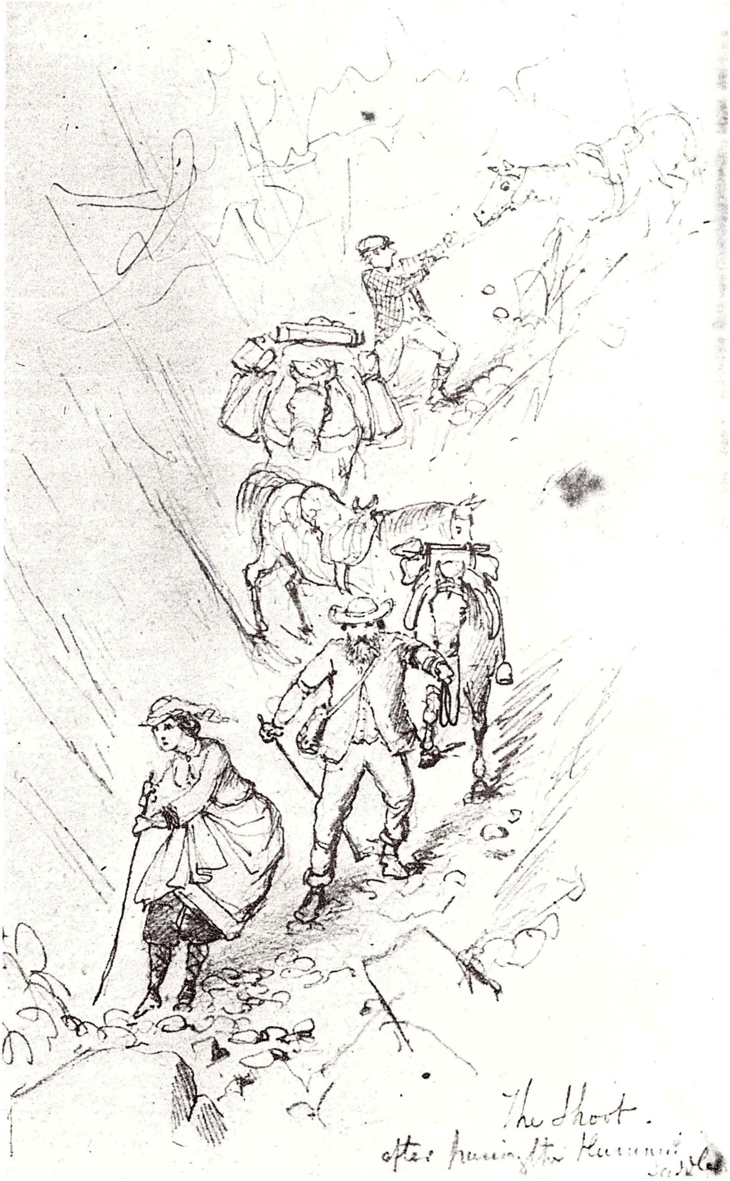
The Bealey settlement 1865. Engraving (? by W. M. Cooper)

Hocken Library.

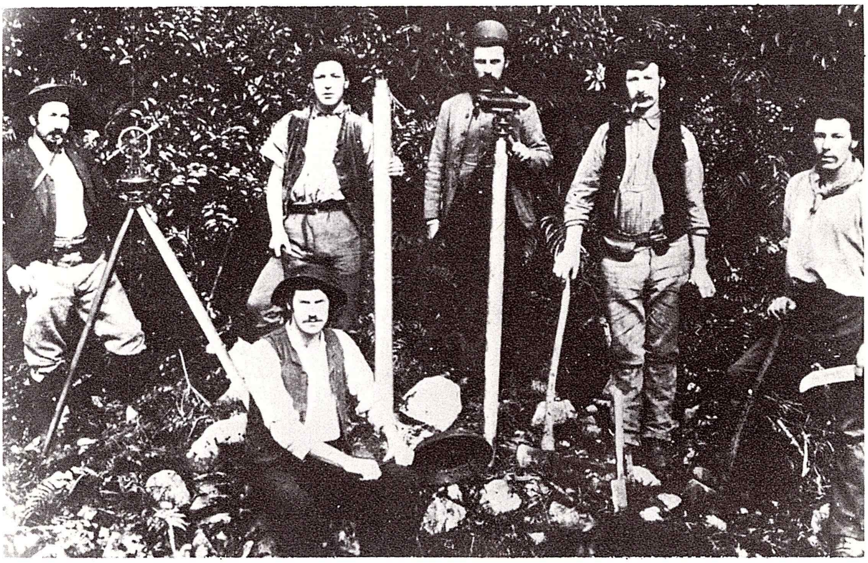


"Clearing up after rain" Oil painting by J. Gibb, 1887.

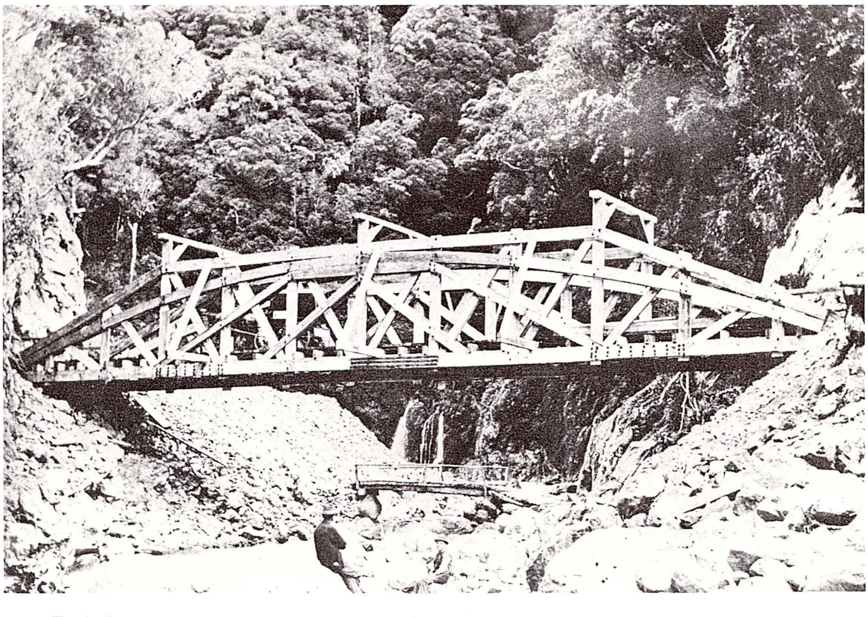
Robert McDougall Art Gallery.


The Shoot.
after passing the Hurunui Saddle

"The Shoot" after passing the Hurunui Saddle. Nicholas Chevalier and his wife on the cross-country journey to Westland, 1866. Pencil drawing by N. Chevalier.
Alexander Turnbull Library



A survey party for the Midland Railway. Canterbury Museum.

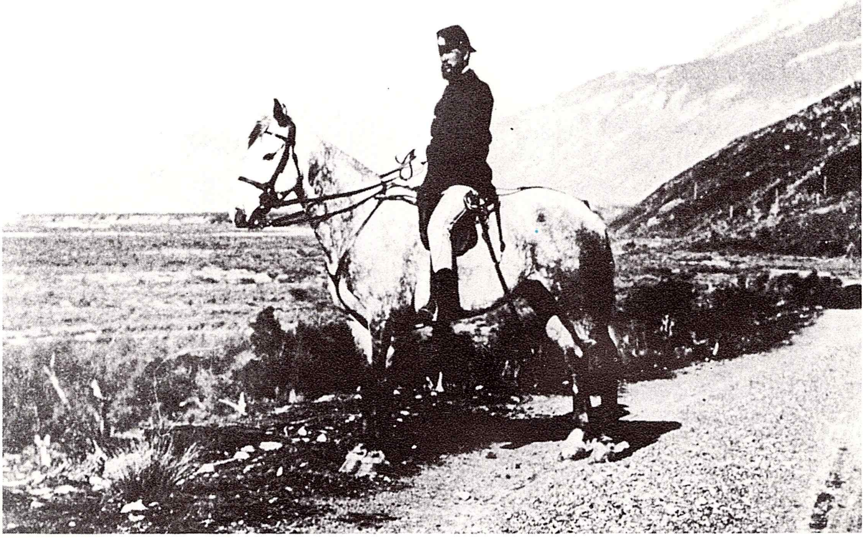


Early footbridge and later road bridge, Otira Gorge. Alexander Turnbull Library.

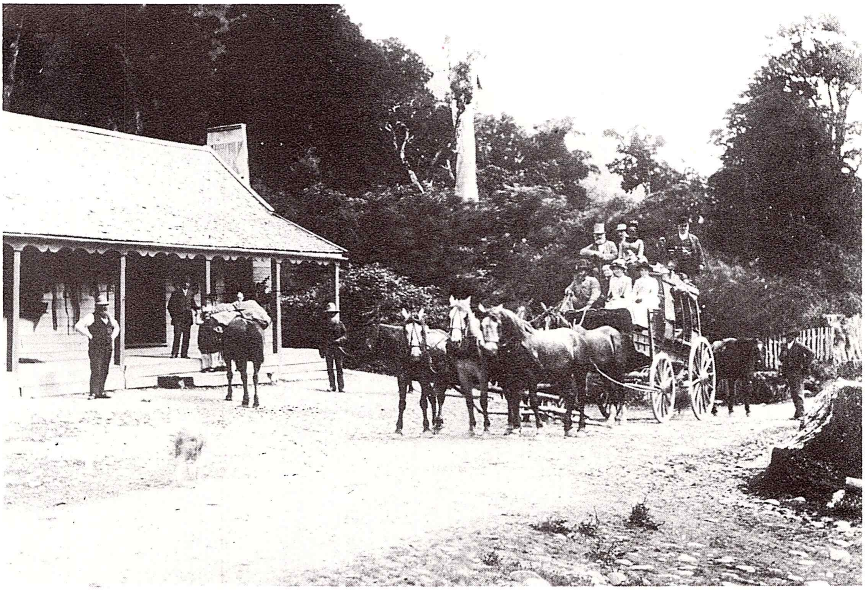
Late winter view of Mt Oates (top left, 2008 m) and the Edwards Valley (centre) from 4500 m.

Carrington Peak (2026 m).

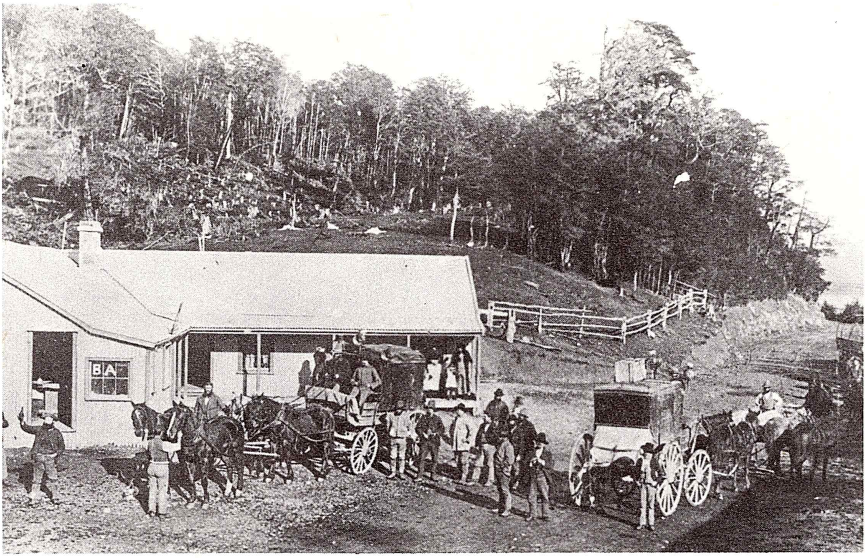
C. J. Burrows



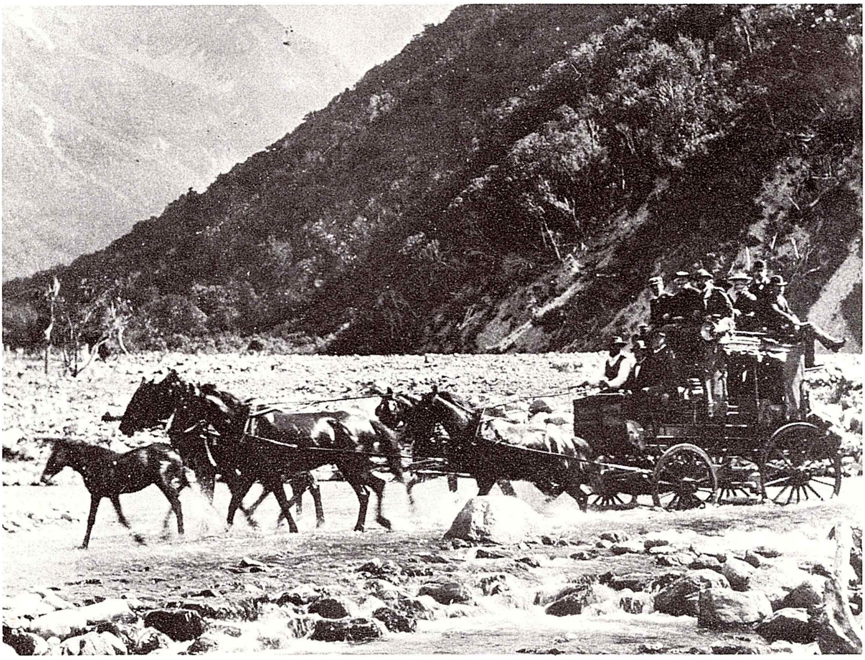
Sergeant of police, Bealey, about 1870. Canterbury Museum.



Jacksons Accommodation House, about 1870. Canterbury Museum.



The Third Bealey Hotel, 1890. Alexander Turnbull Library.



A coach crossing the Otira river about 1900. Canterbury Museum commodation house at the entrance to the Otira Gorge. Across the Pass they found the Bealey Hotel to be comfortable and the food good.

Trade to the West Coast diggings continued in the years from 1866 to 1890, although the greatest boom of the goldfields was over by 1870. This period was the heyday of the coaching service. The full, twice-weekly coach and mail service between Christchurch and Hokitika began in March 1866, the fare being £8 single and, later, £11 return. H. Cassidy took over the service from L. Cole in 1874. The 170 mile trip took 36 hours and the three legs of the journey, with one overnight stop, were Christchurch — Bealey, Bealey — Taipo and Taipo — Hokitika. Four-or five-horse teams drew the coaches and there were changing places about every 15 miles. The stations near the Park (and some early proprietors) were, at Cass (A.D. Baker), Bealey (E. W. Jones), Arthurs Pass (J. Butler), Barrack Creek (Wright),Kellys Creek (Kelly),Aickens (Alexander) and Jacksons (McLintock). There were stores at Arthurs Pass, Kellys Creek and Aickens, and a few shantys where grog was sold.

The leather-sprung coaches were reasonably comfortable, though the road was often rough. Contemporary photographs often show a full complement of passengers. Steep grades such as on the west to east crossing of Arthurs Pass necessitated most of the passengers getting down and walking. There were hazards of various kinds, including the fords, especially that of the Waimakariri River at the Bealey, doubly dangerous in flood. Runaway horses, broken brakes, drunken drivers, blinding snowstorms, all caused difficulties at times and there were several accidents, none of them fatal except to coaches and horses.

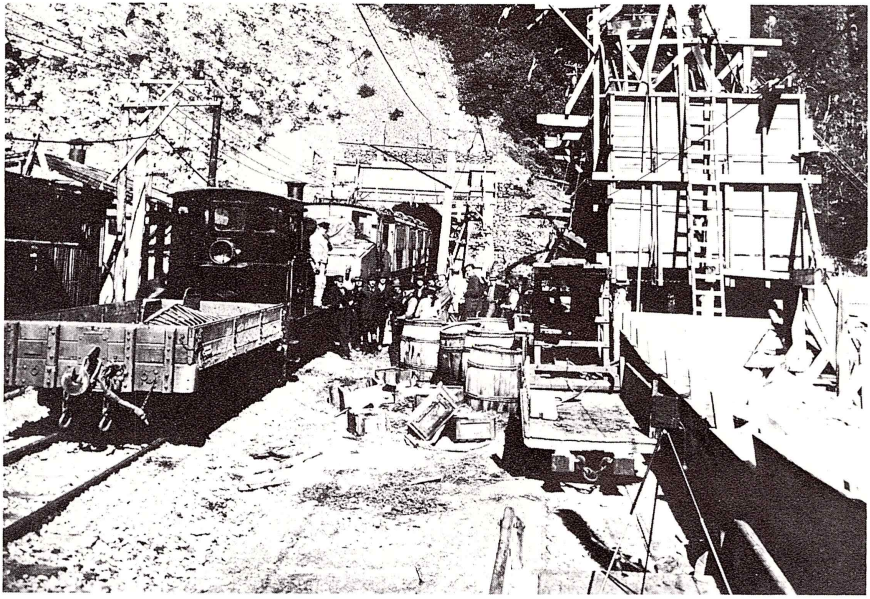
J. Wylde, on a coach journey to Greymouth in September 1868 describes the scene crossing the pass and descending the zig-zag. "The drive up the pass was most beautiful, the sun having risen beautifully and the morning being fair and warm, but the moment we reached the summit everything was changed. A fierce driving rain met us in the face, the whole valley below us was filled with cloud and rain whilst overhead towered up the snowy peaks with one great glacier just then through the cloud. The appearance of the road at the descent . . . is nearly enough to frighten anyone. The road is cut out of the face of the precipice on a zig-zag manner and at each turn it appears as though the horses and coach must drive over and be dashed to pieces. Add to this that the rain had caused continual slips . . . which could not be seen until too late to avoid them and that in many places there was not three inches to spare in the width of the road and you will not wonder that we all wished to get out and walk down . . . the coachman said he would stop directly, but instead of that he started off at a dashing rate and all we could do was to hold on and be as calm as we could . . . I assure you I never felt a greater "sensation" in my life. It appeared almost miraculous that we should have reached the bottom of the mountain in safety, but we did so, then galloped on as fast as the horses could go through the narrow gorge of the river Otira till we reached the house where we should have breakfasted at 8 o'clock. No time however was to be lost unless we chose to be bailed up by the rapidly rising rivers, so all had to help in changing horses as fast as possible. I darted into the house and secured a loaf of bread and then away we went again in our race against the water; every stream we had to cross increasing in depth as we advanced."

Essential supplies for the settlements were sustained by wagon from Hokitika and Christchurch but some commodities were produced locally by small farms and gardens. At Riversdale the swamps near Hawdon and Andrews Rivers were drained for dairying and land was ploughed for the cultivation of feed oats but these enterprises failed. The old homestead site, near the St Margarets hut at the Hawdon, is marked by poplar trees.

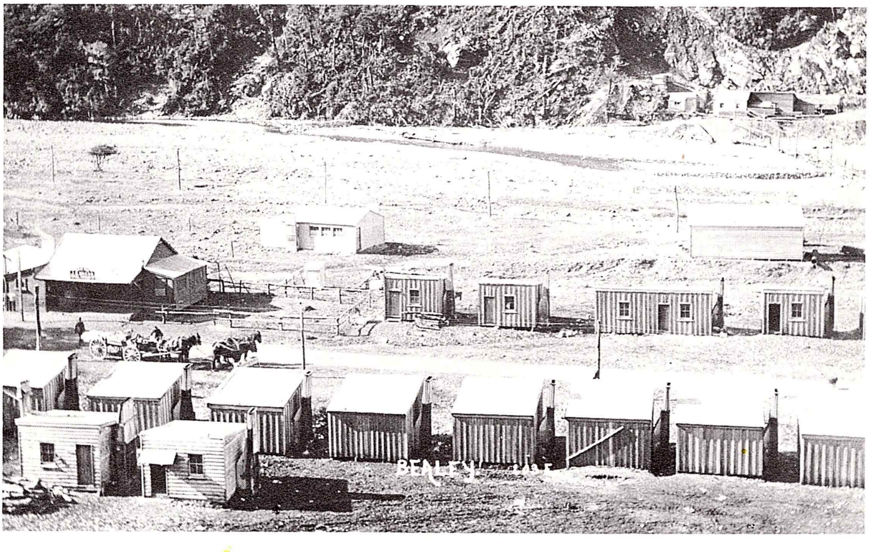
The Bealey settlement consisted of a group of cottages, the telegraph station, a police camp and the Bealey Glacier hotel. A ferry was available and the fordman who picked the route for the coach crossing also lived there. The hotel was renowned. Its proprietor from 1882 to 1901 was J. O'Malley, who began the first tourist venture in the area, guiding visitors to the glaciers at the head of the Waimakariri valley. In 1901 the hotel was large, having 34 rooms, including 25 bedrooms. Several generations of hotels were built in the area, and each was destroyed by fire, the last in 1963. The site, now serving as a picnic ground at the entrance to the Park, is sunny and sheltered and commands an attractive view of the upper Waimakariri.

Barrack Creek was another site for several hotels. The first, below the road as it descends the last cutting from the Otira gorge into the open riverbed, was built of slabs. The flooded river washed it away in 1886 and it was replaced by the first of a series on the main flat. All are now gone and very little trace remains. Only a few garden flowers, a barberry hedge, some fragments of concrete foundations and the remains of a fence are left.

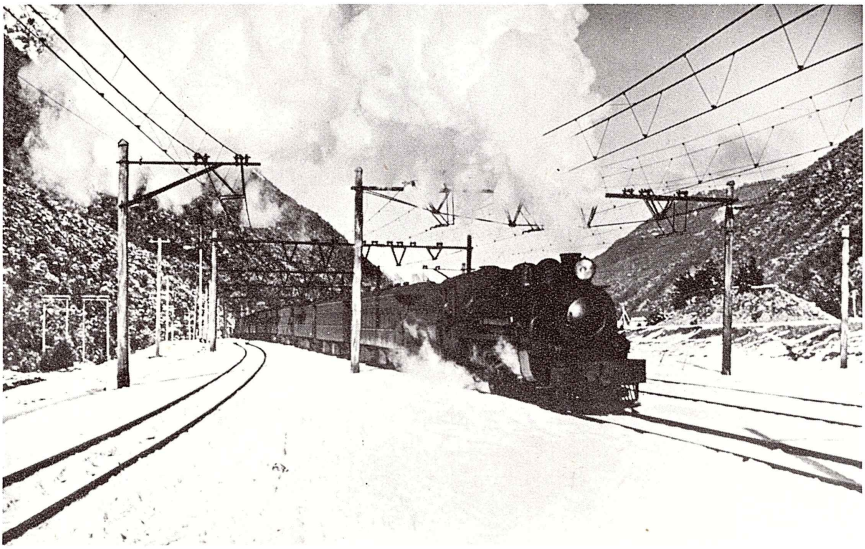
Milestone near Jacks Hut. N. M. Adams



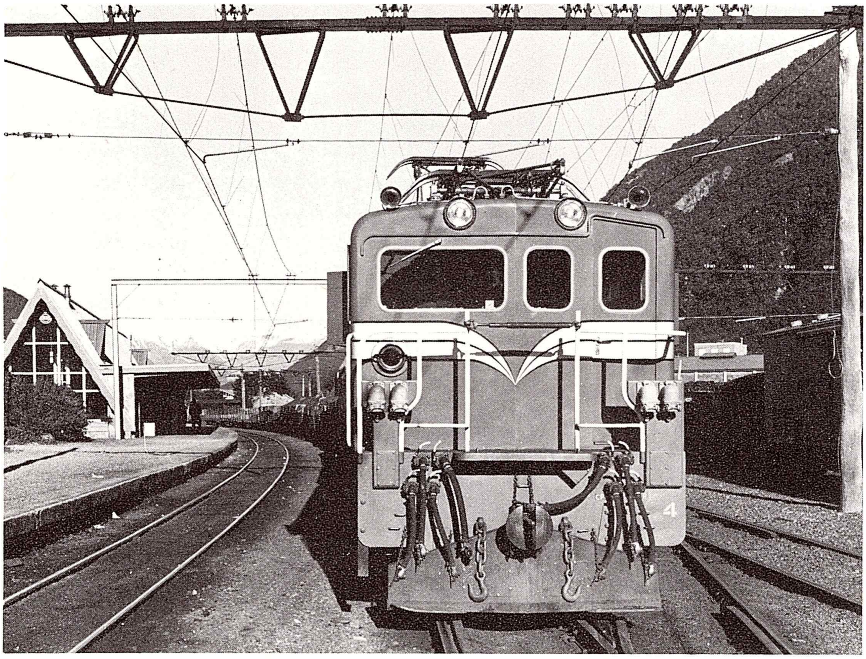
Building the Otira Tunnel. Electric locomotive, and shunter, Otira end.
Alexander Turnbull Library



Building the Otira Tunnel. The construction-camp, Arthurs Pass. Alexander Turnbull Library.



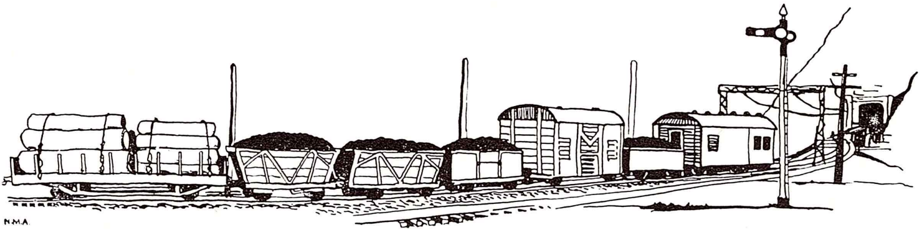
Steam locomotive and the "Snow Sports Special", Arthurs Pass, late 1930's.
Alexander Turnbull Library



Ea class electric locomotive, Arthurs Pass, 1970. New Zealand Railways Publicity

THE RAILWAY

A transition from early to modern times occurred between the beginning of the Midland Railway line from Springfield in 1886 and the completion and opening of the Otira Tunnel in 1923. Railway lines had been completed to Springfield in 1880 and from Greymouth to Brunner in 1876. The enterprise suffered many trials and tribulations because of financial and physical problems in its construction. It was begun by a private company but in 1895 the work was taken over by the Government because of slow progress. Gradually the line was pushed toward Arthurs Pass from both sides of the island. Otira was reached in 1900, but it was not until 1915 that the line reached Arthurs Pass from the east. Then began another difficult phase, the piercing of the Otira tunnel. The first shot was fired in 1908. Again a private company undertook the work and again there were so many difficulties (hard rock, rock falls, streams of water, and high costs of materials) that the company relinquished the contract to the Government in 1912. In 1918 the drives from both ends met, the portion from the Otira end being the longest because of ease of removing spoil and pumping water downhill. The surveys had been made and the tunnel driven with remarkable accuracy. The difference between actual and calculated length was 91.44cm (36 inches), the difference in level was only 2.86cm (1⅛ inch) and in alignment only 1.9cm (¾ inch). Lining of the tunnel and laying of lines and electric cables, the electricity being generated by a plant at the Otira end, took another 5 years and there was a grand opening and passage of the first train in 1923. The construction of the tunnel at that time ranks as one of the most outstanding engineering feats ever performed in New Zealand. The tunnel 8.45km (5¼ miles) long was then the seventh-longest in the world. The coach service, progressively shortened as the railway line reached towards the pass, finally came to an end with the opening of the tunnel. Another era ended recently when steam locomotives were replaced on the Midland line by diesel engines.



Train at Arthurs Pass station with timber and coal from Westland. N. M. Adams

MODERN HISTORY

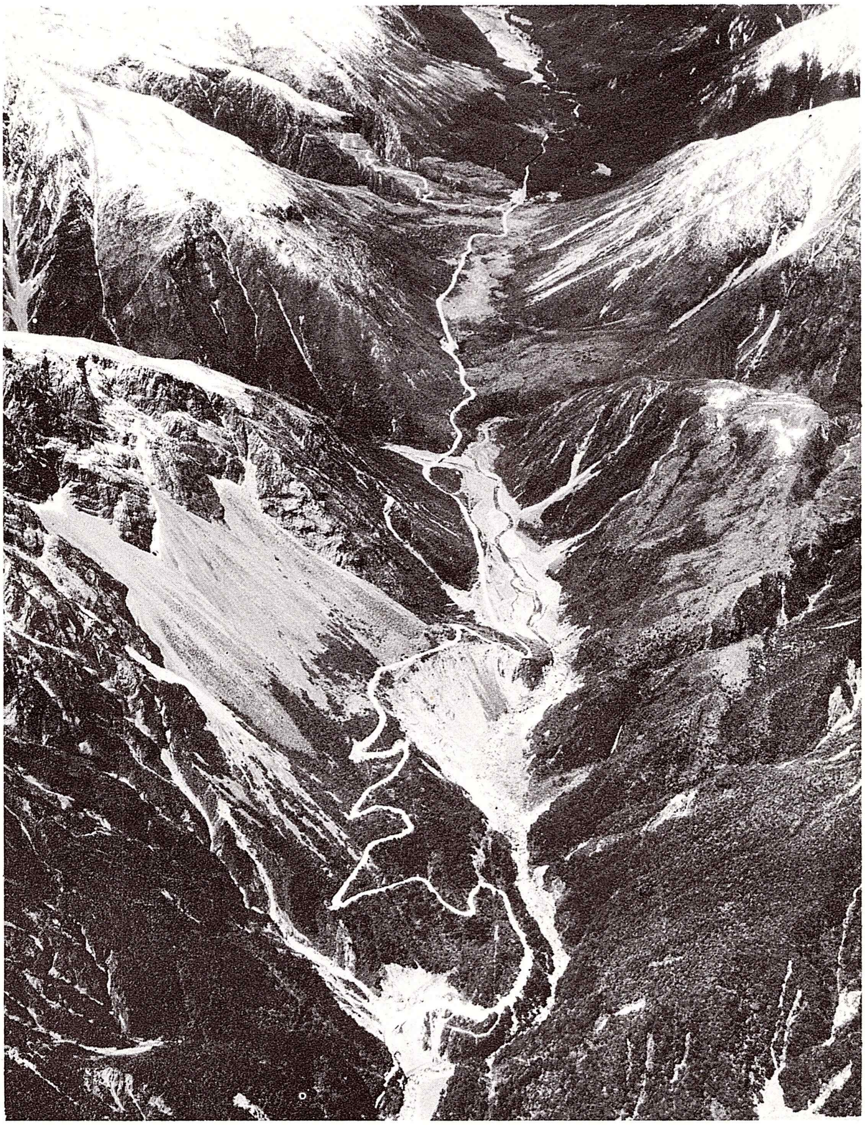
There is no space for a full description of modern history of the Park. Some highlights are noted below:

1908 Red deer first released in Poulter valley.
1925 Canterbury Progress League and Tourist Dept. visit upper Waimakariri with C. Carrington.
1929 Establishment of Arthurs Pass National Park. Violent earthquake.
1930 First deer control campaigns by Dept. of Internal Affairs.
1937 Power pylons built over Pass. First full-time ranger in the Park. Road bridge built at Bealey.
1956 Opening of Chapel.
1959 Opening of Alpine Museum.
1963 Beginning of road sealing. (Sealing of Otira Gorge zig-zag completed 1971)
1967 First helicopter operations against deer.

FOUNDATION OF THE PARK

The prime mover in the setting aside of land for a Park was Dr Leonard Cockayne one of the first ecologists in the world. He had travelled to the Upper Poulter valley in 1898, and, in the course of botanical studies in the Waimakariri basin, including a study of the effects of fire on forest and scrub on Arthurs Pass in 1897-98, and visits to the glaciers of the upper Waimakariri, came to know the area well. His studies are being continued by modern botanists. He purchased a section at Kellys Creek and had a cottage there. His reputation was such that many eminent botanists from all round the world stayed with him and investigated the flora of the area. At the turn of the century Cockayne wrote enthusiastically about the beauties of the area, the need for their preservation and the great value of mountains in the physical and moral training of youth.

In 1901, prompted by Cockayne and the Christchurch Beautifying Association, the New Zealand Government agreed to reserve 6874 hectares (17,000 acres) in the Otira Valley and an adjoining area of 20,230 hectares (150,000 acres) in the Waimakariri valley for a National Park. The project was given impetus about 1925 by the interest in the area taken by the Canterbury Progress League and the newborn Canterbury Mountaineering Club, and Sir Arthur Dudley Dobson's efforts. In 1929 the Arthurs Pass National Park was constituted and the first Park Board included Sir Arthur Dudley Dobson, Sir Robert Heaton Rhodes, Professor Robert Speight, Dr E. Teichelman and Mr Edgar Stead, all eminent in their own fields. Progressive additions have been made until now the Park includes 98,370 hectares (243,000 acres).



The Otira Gorge Zig-zag and the road across Arthurs Pass, looking south-east.

V. C. Browne

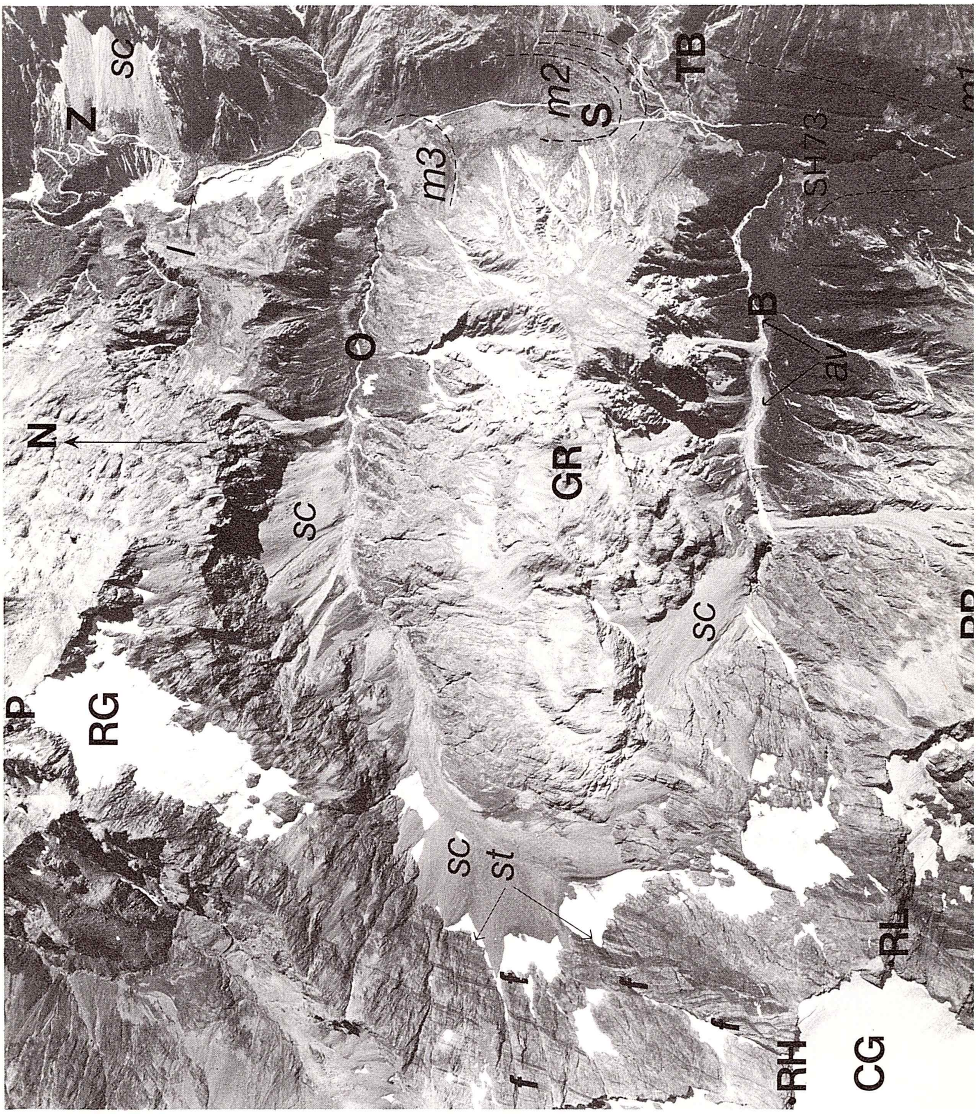
GEOLOGY AND LANDFORMS

Mountains, passes, valleys and rivers characterize the landscape of the Park. They, in turn, are affected by many processes which have left clues in the rocks or the shapes of structures in the landscape.

The story may be begun when the rocks of the Park, along with those of most of the Southern Alps, had their origin in the depths of an ancient sea in late Palaeozoic to Mesozoic times, about 200 million years ago. The rocks originally were deep-water sediments consisting mainly of sands and muds. They contain relatively uncommon shells or casts of the scallop-like bivalve *Monotis,* the worm-tube *Terebellina,* and sparse plant impressions. Rare specimens of fish vertebrae and a possible bryozoan *"Monotrypella"* have been found. The greatest concentration of *Monotis* fossil localities in the rocks of the Southern Alps, about 50% of the known sites, occurs in Arthurs Pass National Park, although they are much commoner in the rocks of Nelson and Southland.

The sediments were subjected to enormous pressure, hardened, tortured into fantastic folds and raised above sea-level some 140 million years ago. The rocks extending from the eastern side of the Park to a little west of the main divide are hard, but brittle, grey sandstones, known as greywacke, and black shaley rocks known as argillite. Some bands of red rock, possibly derived from volcanic ash, and small areas of volcanic lavas are present and there are occasional bands of conglomerate. Further west, where the effects of heat and pressure were more pronounced, the sandstones and mudstones grade into somewhat foliated rocks, known as phyllite or schist, often rich in mica and having conspicuous quartz veins.

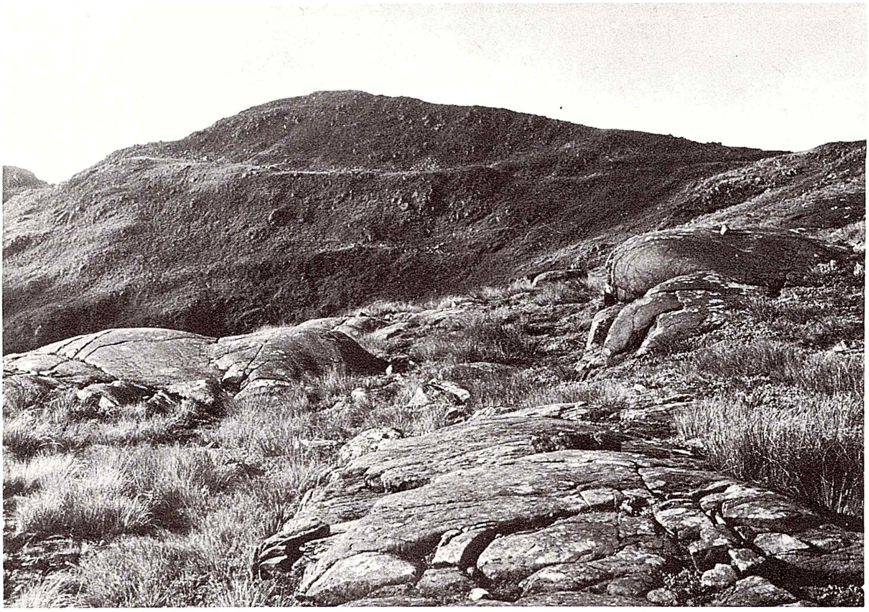
After uplift, the land was eroded, and reduced to low relief. In the late Cretaceous and Tertiary periods, beginning more than 60 million years ago, parts of the South Island to east and west sank beneath the sea to receive more layers of softer sediments. Again the land began to rise in the period from about 25 million years ago, to form the present mountain masses. The movement quickened in the early Pleistocene period, about 25 million years ago, and still continues. This uplift was accompanied by the fracturing of great blocks of rock by enormous pressures, so that they moved relative to one another along faults. One great rent, with several branches, the Hope Fault, trends nearly west-east, extending about 240 km from the even greater Alpine Fault near Inchbonnie, along the Taramakau Valley and through Harpers Pass to the east coast north of Kaikoura. A large side-branch of the fault extends south-east from it through Lake Kaurapataka and up



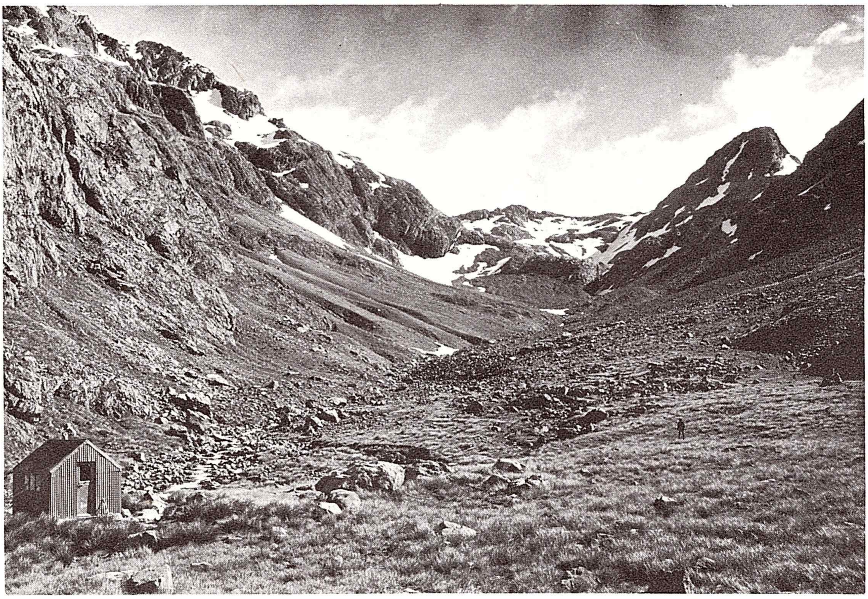
Vertical aerial photograph of Upper Otira and Upper Bealey Valleys and Arthurs Pass. P Mt. Philistine, RH, RL High and Low Peaks of Mt. Rolleston, GR Goldnev Ridge, RR Rome Ridge, O Otira River, B Bealey River, Z Otira Gorge zig-zag, T.B. Temple Basin track, SH 73 State Highway 73, S Summit of Arthurs Pass, RG Rolleston Glacier, CG Crow Glacier.

f----f fault, st stratified rocks, sc screes and snow avalanche debris, av old snow avalanche track, l landslide, m glacial moraines probably formed between about 10,000 (m1) and 5,000 years ago (m3).

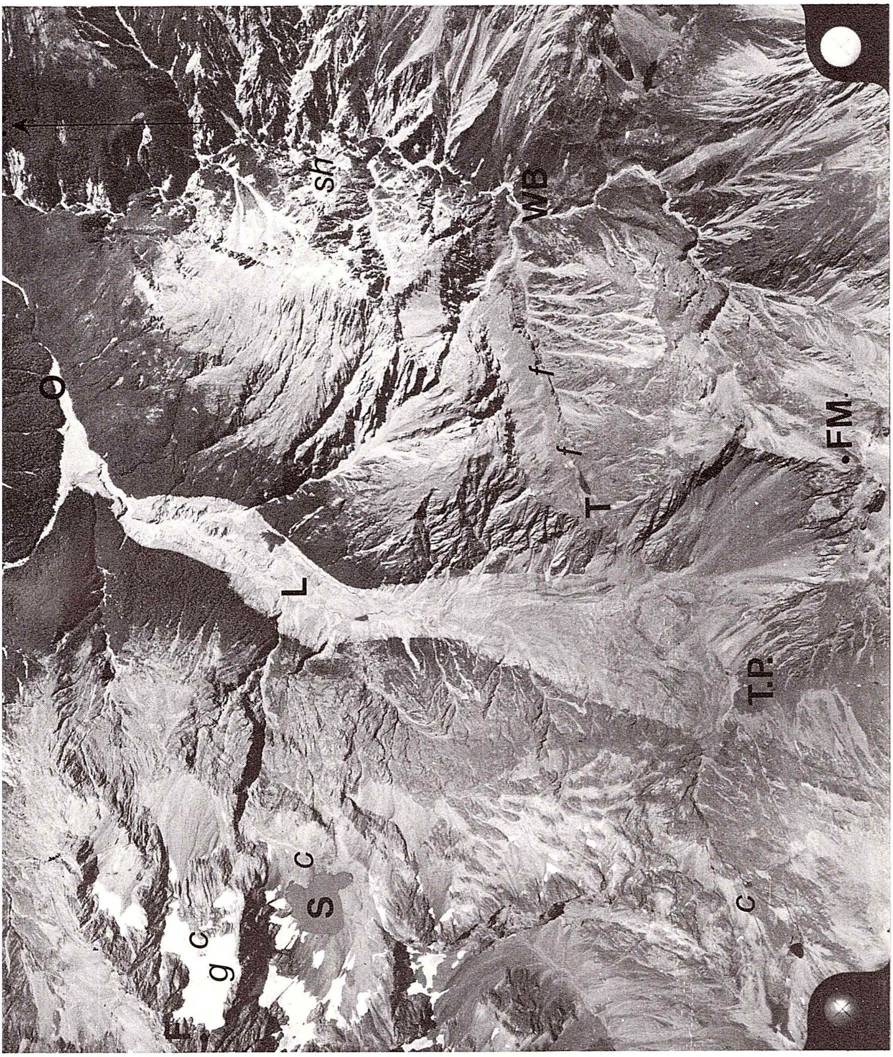
Aerial Mapping, Lands & Survey Dept.



Ice-smoothed and striated rock, Kelly Range. C. J. Burrows



A glaciated valley head. Waimakariri Falls hut and Waimakariri Col. (1750 m). C. J. Burrows



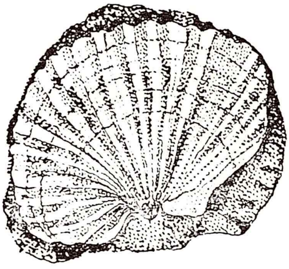
Vertical aerial photograph of Falling Mountain landslide and the Upper Otehake River. FM Falling Mountain, TP Taruahuna Pass, T Tarn Col, WB West Branch, O Otehake River, S Lake Sally, F Mt. Franklin, L The Falling Mountain Landslide, f---f fault, sh shatter zone, g small glacier, c cirques. Aerial Mapping, Lands & Survey Dept.

Kellys Creek. Parallel to this are numerous recent fault traces trending N.E. — S.W. and many more are oblique to this, trending N. — S. Traces of this early history, the stratified sediments and the folding and faulting, are exposed in cliffs such as those beneath Mount Rolleston in the Upper Otira Valley.

Probably related to the fault zones are several warm springs e.g. in the Otira Gorge, the Deception River, Otehake valley, and upper Thompson River); most are accompanied by sulphurous gas.

The Park is within the southern end of the major earthquake zone that extends north-east through Marlborough and the eastern North Island. Three major, destructive quakes, (resulting from release of tension in the earth's crust), have shaken the area in the last 90 years. The last of these, the Arthurs Pass earthquake in 1929, caused extensive damage to steep slopes in the Otehake, Hawdon and Poulter valleys. The most spectacular effect was the Falling Mountain landslide. A large section of the mountain, containing hundreds of thousands of tons of rocks, fell onto the Taruahuna Pass area, mounted part way up the flank of Mt Franklin opposite, then swept about 5 km down the Otehake valley destroying everything in its path. The slide has been little colonized by plants bu much of the rock debris has been eroded by the stream. Another landslide at the same time dammed a small lake in the Thompson stream and numerous other small landslides and rockfalls occurred. Older large landslides include the one damming Lake Minchin, and the huge pile of boulders crossed by the highest part of the highway above the Otira Gorge zig-zag.

Early in the mountain-building period the processes of erosion removed any young, soft marine sediments that had been deposited in the eastern area of the Park, although some remain not far away, near Hohonu and Turiwhate on the west and in the Castle Hill basin and Esk valley on the east. The land became dissected into the present general pattern of mountain ranges and valley systems.



Monotis, a fossil bivalve mollusc. N. M. Adams

Mountainous areas are subject to a variety of vigorous land-shaping processes. One particular process which has left its mark most clearly is glaciation. During about the past half million years four major periods of glaciation have alternated with milder periods much like the present. Only the effects of the last main glaciation and subsequent events, in the period beginning about 70,000 years ago, can be discerned in the Park. During the glaciation the Park must be visualized as having been a collecting area for vast quantities of ice, filling the valleys till probably only the tips of the mountains emerged. Glaciers flowed from the divide to west and east. At the height of glaciation the termini of the glaciers lay near Kumara on the west and Springfield on the east, respectively. In the last main phase of the glaciation, however, there was less ice and the terminus of the Waimakariri glacier lay near Mt White some 17,000 years ago. Smaller cirque (basin) glaciers occupied many of the mountain slopes. Between about 15,000 and 10,000 years ago the large glaciers shrank back into the mountains, leaving minor moraines as they halted or readvanced slightly. Such are the fluvio-glacial deposits forming benches between Temple Basin and Jacks Hut. One prominent moraine ridge, marking a distinct advance of a glacier, extends from the Upper Otira Valley towards Lake Misery. No date is yet available for it but it may be no more than about 5000 years old. Similar evidence for small readvances of glaciers can be seen in many parts of the Park.

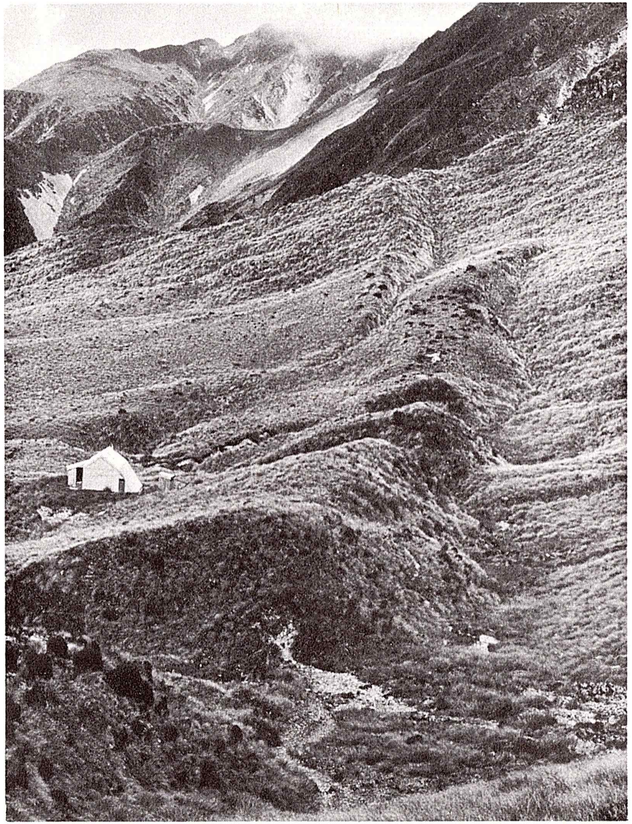
Minor active glaciers still remain in high cirques in the Waimakariri watershed. The largest of these are the Crow glacier on Mt Rolleston and the White, Marmaduke Dixon and Cahill glaciers at the head of the White River. Smaller ice patches occur in various places. All of these glaciers and ice-patches have undergone drastic shrinkage in the last 70 years and small but well-marked moraines record their former greater extent over at least the last 300 years. These evidences imply substantial changes in the mountain climate in relatively recent times.

The shape of valleys, passes and mountains is much influenced by the effects of moving ice in steepening hillsides, hollowing-out valley-head basins, scraping over and rounding rock outcrops, carving out lake basins and depositing moraines. Many waterfalls have their origin at the lip of a cirque that formerly held a small hanging glacier.

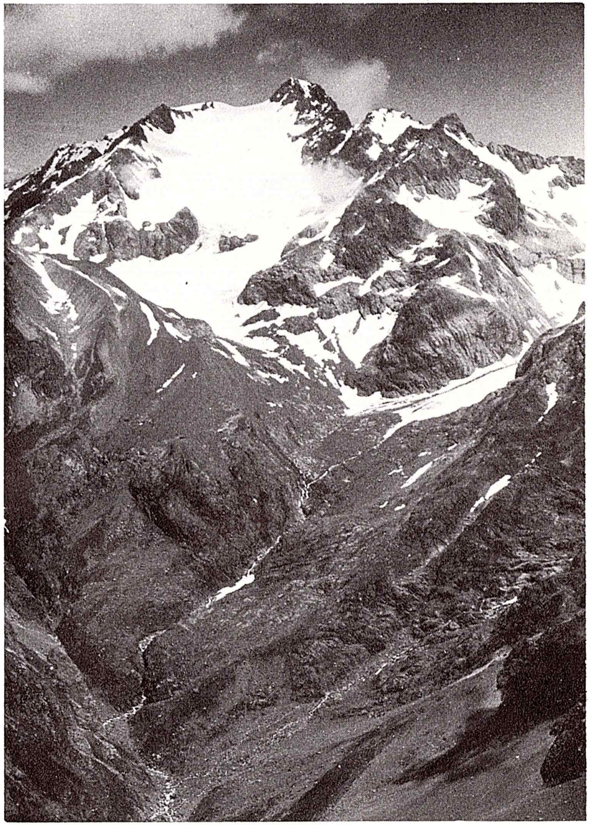
The erosive power of streams and rivers and deposition by them of alluvium has shaped many of the other landforms in the Park since the end of glaciation. Valleys and deep gorges have been cut down, shingle fans and river terraces have been formed and the floors of the glacial valleys choked with deep gravel deposits across which the streams meander. These shingle riverbeds, characteristic features of the New Zealand scene, are found in only a few other parts of the world. They are a direct result of interaction of the rock type with the weathering and transport processes, controlled by a climate with severe extremes. During floods the rivers are an awesome sight, sometimes covering the entire width of their beds with dirty, tossing water. The rumbling of boulders in the streams is evidence of their powers of transportation.

On the hillsides vast screes testify to the vigour of other erosive processes. Stones, wedged from mountain peaks or cliffs by frost, fall or slide downhill to lie on the screes. The latter are most characteristic of the sunny slopes on the eastern side of the Park. Their presence there is mainly the result of drier climate, lack of vegetation, a thin snow cover and severe frost on the higher slopes in winter. Rockfalls and landslides triggered by earthquakes, debris-flows during heavy rainstorms and snow avalanches also contribute to the screes. Some very large flows of shingle, lubricated by vast amounts of water, occurred throughout the Park during a violent storm on Boxing Day 1957. Some of the most spectacular of these happened in the Otira Valley and communications — road, rail and telephone — were severely disrupted. The townships of Arthurs Pass and Otira were threatened with severe damage by flooding and stream erosion at this time.

The upper Otira and the upper Bealey valleys are places where the power of snow avalanches to affect the landscape are plainly seen. After heavy snowfalls in winter mighty avalanches crash down from the cliffs and large deposits of compacted snow line the floors of the valleys. Great cones of rock debris have accumulated below the cliffs of the upper Otira valley, largely derived from the solid material contained in the avalanches. The vegetation is much-modified by avalanche activity and in the upper Bealey a cleared tongue in the forest extends about 1.5 km down-valley from the foot of Mt Rolleston. This was formed several centuries ago by much larger avalanches than any that has occurred in historic times.



A fault trace on the Kelly Range and the Carroll Hut. C. J. Burrows



Mount Murchison (2400 m), the highest peak in the Park. White Glacier on left. Marmaduke Dixon Glacier on right. Young moraines extend into the valley in foreground. T. Chinn

TABLE I: SOME CLIMATIC FIGURES

ARTHURS PASS VILLAGE,762 m

	J	F	M	A	M	J	J	A	S	O	N	D	Year
Mean Rainfall (cm) 1916-68	33.12	32.74	29.13	35.58	34.59	27.13	25.65	28.83	31.87	44.35	39.82	34.24	397.08
													Mean No. Rain Days 1960-68
													165 (approx)

ROUGH CREEK BASIN, 1460 m

Monthly Extreme Temperatures (^{0}C) (Approx. values 1960-63, 30 cm above ground)												
Maximum	24	22	19	19	16	12	12	11	11	16	21	21
Minimum	- 1	- 3	- 4	- 4	- 5	- 8	- 9	-9	- 8	- 8	- 7	- 4

(Highest max temp. recorded 29.4^{0}C, lowest min. -15.6^{0}C. Temperature under snow is constant at 0^{0}C. Minima in the village are often lower than these in winter and higher in summer. Maxima in the village are usually higher throughout the year).

WEATHER AND CLIMATE

Weather is an ever-interesting topic of conversation at Arthurs Pass. Effects due to altitude and the effects of proximity to the main divide dictate the patterns of day to day weather and the annual climatic pattern is also influenced by the geography. Most frequently the weather is westerly. Few are the days when a wind does not blow across Arthurs Pass from the west, even when the weather is fine. The climate is rainy (Table I) and there are often long periods of unsettled weather. Nevertheless there are also long periods of fine weather and much of the high annual rainfall is concentrated into relatively few, heavy falls. The strong rainfall gradient from west to east may be seen from annual average figures for Otira (about 500 cm), Arthurs Pass (about 400 cm) and Bealey (about 150 cm).

There are no sunshine records or continuous records of temperature for localities in the Park. Hokitika in Westland (1855 hours of sunshine per year, 44% of possible) and Christchurch in Canterbury (1990 hours per annum, 47% of possible) are the nearest recording stations. Otira probably receives less bright sunshine than Hokitika and the eastern fringes of the Park more than Christchurch.

Table I contains some short-term temperature records from Arthurs Pass. Table II includes some records of snowfalls.

TABLE II: SNOWFALLS AT ARTHURS PASS, 1960

Days on which snow fell 45 (total of 316 days observations).
Wind direction N.W. 23, S.W. 22
33 of the days when snow fell were between 1st June and 15th September.

Lower limits of snowfalls (33 observations)

Altitude (m)	No. of observations
1800	2
1500-1800	7
1200-1500	-
900-1200	14
600- 900	10

We may briefly follow the annual cycle of changes in the weather and their effects on flora and fauna, beginning as the winter snows start to melt back on the tops in October and November. Spring is usually a period of strong nor'west storms and floods. Storms are often intense and as much as 25 cm of rain may fall in 24 hours on the divide. Streams and rivers brim with melt water and the rain seems to be incessant. In October and November 1970, 165 cm of rain fell in 40 days.

As spring advances the first leaves emerge on the ribbonwood trees and the red deer hinds begin to produce their fawns. In early summer the warming conditions bring out the first full flush of subalpine and alpine flowers. The large, white alpine buttercups and snowy senecios flourish on the passes and the first long-tailed cuckoos arrive. Dotterels and oyster-catchers are first seen in the riverbeds, courting in preparation for mating and nest-building. If it is a flowering year the male beech trees are suffused with their bright red flowers and snow-white clouds of clematis hang in the trees of the lower Otira Gorge. Scarlet mistletoe is prominent on beech trees in the east.

High summer, in January and February, is a pleasant time. The snow has melted back to the permanent snowfields, bright red rata blooms in the Westland valleys. There are many bright, sunny days when the air is crystal clear.

Occasionally there are sweltering hot periods when the bush and grasslands dry out. The streams begin to run low and, as in the summers of 1970-71 and 71-72, some trees may die on well-drained sites. The fire risk is high and smoke pours over the divide from bush and scrub fires in Westland.

At the end of a fine, cloudless spell, though it may remain clear on the east, on the western side of the divide, cloud banks lie on the Kelly Range and up the Taramakau Valley and fog may stream over Arthurs Pass, Goat Pass, Walker Pass and Harpers Pass. The sandflies seem to be most insistent during these humid periods. There may be several days like this, with drizzly rain in the Westland Valleys before the onset of stronger westerly conditions, a display of wave clouds (the familiar "hogs backs") a high cloud sheet, strong wind and heavy rain on the divide. When the winds are more northerly there may be several days of drizzly rain. The rivers rise rapidly with the rain but fall just as quickly when it stops.

A north-westerly storm is often followed by a change to the south but usually this is not severe, though accompanied by low cloud and light rain for a few days. It is not unusual to have light snow on the tops during these southerly storms in summer.

As summer turns into autumn, the air is sharpened by the first frosts. The leaves of the ribbonwoods begin to turn yellow and summer-green plants like tutu and giant alpine buttercups begin to die down. The long-tailed cuckoos depart for the Pacific Islands and the migratory birds of the riverbeds leave for the coastal estuaries. In the forests and on the tops the red deer stags begin to roar. Days are often mellow but, as in spring, westerly storms are often more frequent in autumn than at other seasons. Fairly frequent snowfalls begin to dust the tops. As winter advances snow begins to lie more heavily on the tops and falls extend down to the valley floors, but usually the snow melts back and seldom lies in Arthurs Pass village for more than a few weeks at a time. Periodically a westerly storm, with relatively warm rain will clear the snow from the lower alpine grasslands.

The depth of winter may be a bitter time with heavy frosts in shaded valleys. On the margins of all small streams and waterfalls hang clustered icicles. Cold winds from the west blow over the passes and most of the snow which falls does so during westerly storms. Snow plumes blow away from the high peaks and great depths (up to 6m or more) of drifted snow lie in the higher basins. Avalanches of loose snow fall from the steeper slopes, usually channelled into well-worn paths and it is dangerous to traverse the upper Bealey and upper Otira Valleys. After heavy snowfall the scene in the village, with trees and buildings blanketed, rivals that of a Swiss or Austrian winter. Only in the late winter do conditions relent so that there are long fine spells, relished by residents of the village, skiers and mountaineers alike.

Plants of the subalpine scrub zone. Large alpine daisy *(Celmisia coriacea)*, shrub daisy *(Senecio eleagnifolius)* and broadleaved snow tussock *(Chionochloa flavescens)*. N. M. Adams

PLANT AND ANIMAL LIFE

This chapter can only be a brief account of the rich flora and fauna of the Park. Field naturalists are directed to a list of reference books, at the end of this section to help in the identification of plants and animals. Some of the Park publications, such as the Nature Walk guides are useful and it is hoped that more pamphlets will soon be published.

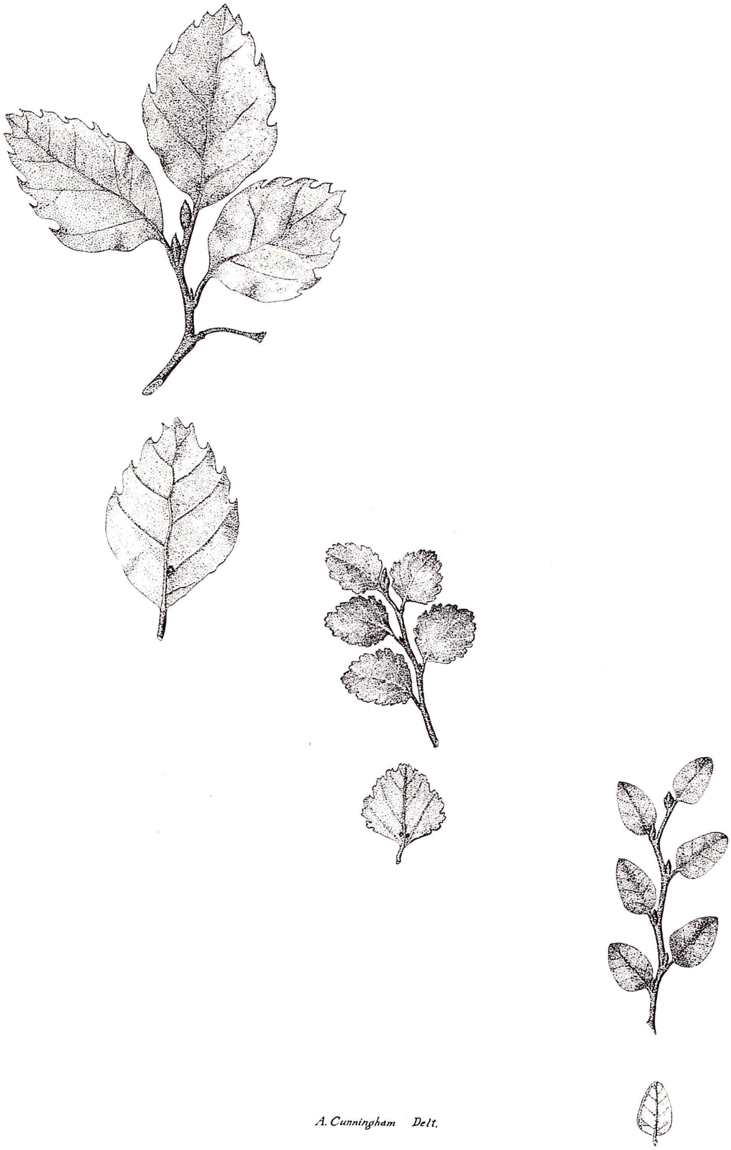
Note that all plant and animal life in the Park is protected except introduced mammals and introduced weeds. Collecting may be done only by permit, obtained from the Chief Ranger.

Perhaps the simplest way to outline the main kinds of vegetation and animals associated with them would be to describe the changes occurring from valley floor to mountain top on either side of the main divide and to explain the changes found on a journey across Arthurs Pass from the Canterbury to the Westland sides of the Park. Technical plant and animal names would make for heavy reading, so these are listed by habitats at the end of this section with common names, mainly in the order that they appear in the text.

EASTERN VALLEYS

On the riverbeds in the eastern valleys the first impression is that there is merely bare, grey gravel present. Closer inspection reveals an open cover of mat-daisies, willowherbs, shaggy moss and various other species including many encrusting lichens. This vegetation grades into the dun-coloured short grassland of the valley flats with a predominant cover of hard tussock, blue tussock and many other small plants including mat-daisies, mat-coprosmas, cyathodes, dwarf pohue-hue and harebells. There are attractive small flowers in early summer and fruit later in the season. Many introduced plants have invaded these grasslands, of which the grasses browntop and sweet vernal are most conspicuous. Ground lichens are often abundant. The grey, thorny shrub, matagouri, often difficult to penetrate, is an important species on the valley floor flats.

On riverbeds and valley flats the little brown pipits and multi-coloured paradise ducks are common. Pipits, running along the ground or fluttering short distances, are friendly little birds. Paradise ducks are more wary. A familiar overtone to the dull roar of the river is the squawk of the white-headed female and the honk of the black-headed male as they wheel overhead or, dragging wings, try to attract one away from their young. Other birds, swallow-tailed and slender blue-grey terns, hawking for food in the streams; smartly plumaged banded dotterels; black and white pied oyster-catchers with bright orange bills; harriers, slowly circling as they quarter the grasslands; wary canada geese, and black-backed


A. Cunningham Delt.

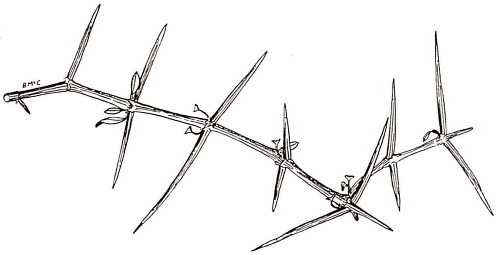
The beech species in the Park, red beech *(Nothofagus fusca)*, silver beech *(N. menziesii)* and mountain beech *(N. solandri var. cliffortioides)*. A. Cunningham gulls are all part of the scene. Hares are the only abundant wild mammals.

Invertebrate animal life is varied. Swift hunting spiders are common, as is the prominent nest of the nursery spider, in grassland and scrub. Cicadas make a background chittering on sunny days; there are many true flies and moths. Shield-bugs are abundant on the mat-daisies. The little purplish boulder butterfly and the larger orange copper butterfly are quite common. A tiger beetle frequents clay banks where its larvae live in holes and a large orange spider-hunting wasp searches for its prey in the grassland.

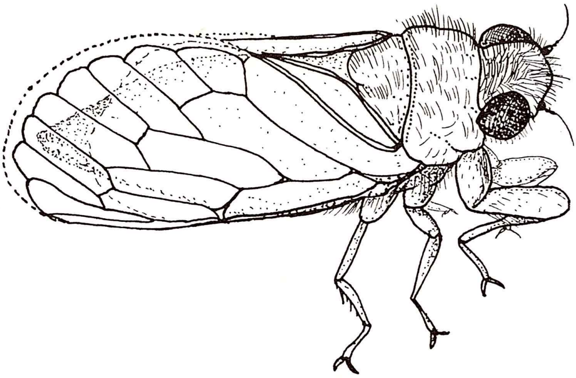
The rivers are inhabited by brown trout and, in late summer, spawning quinnat salmon. The trout feed mainly on caddis-fly, stone-fly and may-fly larvae.

The eastern forests, dark blue-green from a distance, are dominated by small-leaved mountain beech trees, often only 12 to 15 m tall, but up to 22 m tall in favoured sites. Near the valley flats, inside the forest, there is always a more or less close cover of mosses forming a carpet on the deep litter of the forest floor. Especially in autumn there is an abundant growth of fungi of many types. The trunks of trees are richly clad in mosses, lichens and liverworts. There is often a cover of beech seedlings or saplings on the ground. In moister places shield fern or hard fern, sedges, small herbs and the shrubs celery pine, coprosmas and other species are present. Less common are cedars, mountain totaras, broadleaf, weeping mapou and a few other tree and shrub species. Among the eastern forests are some extensive stands of red beech and silver beech, particularly in the Poulter Valley. Areas cleared of forest by fire, mainly in the Waimakariri Valley, are clothed in dense, brown, aromatic manuka scrub.

In the forests and near their margins some introduced mammals are quite common. Mice, stoats and red deer are the most numerous and the deer probably have the most adverse effects on the environment, by browsing and trampling. Brush-tailed possums are present but less abundant than on the western side of the Park.



Matagouri *(Discaria toumatou).* B. McCulloch



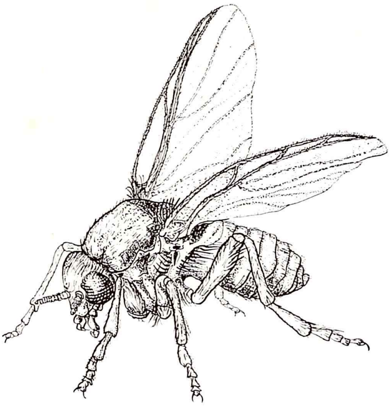
Maoricicada cassiope, an alpine cicada. V. L. Burrows

The eastern forests have a moderately small bird fauna. Among the common birds are the melodious bellbird, flocks of silvereyes, fantails with their erratic flight and squeaky twitter as they hawk for insects, black-headed male tomtits and the drabber females. Chattering flocks of brown creepers inhabit the forest canopy, grey warblers of the neat, globular nests and lilting song occur frequently and tiny riflemen with attenuated tails, creep over tree trunks emitting their sharp little cry. In summer the bush resounds long into the night with the monotonous call of the long-tailed cuckoo. Common introduced birds are blackbird, chaffinch and dunnock, and in the subalpine scrub, redpolls.

Bush hawks, with harsh scream and swift flight, are ruthless hunters, not uncommon in the valley heads. Blue ducks are present in the gorges of forested creeks. They dive for food in the rapids and pools and, if alarmed the female has a rattling cry and the male a high-pitched whistle. The spotted kiwi, a nocturnal bird, is often heard but seldom seen in the valley heads. Visitors at Arthurs Pass may notice its footprints in mud or snow. The red beech forests are richer in birdlife in summer. Flocks of yellowheads squabble in the trees, chattering yellow-crowned parakeets often accompany them and kakas work on rotting dead trees, searching for insects. The loud cry of the robin is also heard here and they will come very close if one sits still.

The invertebrate fauna of the forests is very rich but tends to be cryptic, except for those ubiquitous nuisances, blowflies and sandflies.

The statement "This tiny fly is possibly one of the most successful destroyers of patience and provokers of profanity in the Colony" was made



A sandfly *(Austrosimulium sp.)* about to bite. 16 times life size. V. L. Burrows

about a close relative of the sandfly in Canada, but equally well applies here.

In the forest canopy and generally in the forest there are many species of flies and moths belonging to different major groups. The moths are seen at their best round a light at night-time. Bees and wasps, large and small are common and so are such groups as scale insects, mites and weevils, closely associated with the trees. A distinct group of cicada species is present. Parasites of the tree trunks include boring beetles and sapsucking scale insects. There are many more different invertebrate animals evident if one turns over rotting logs, lifts bark from dead trees, delves in the leaf litter or digs in the soil. They include wetas, numerous beetles, cockroaches, spiders, harvestmen, mites, millipedes, centipedes, hoppers, earthworms, flatworms and other groups. An uncommon but very interesting animal, a link between worms and arthropods, is the greenish caterpillar-like peripatus.

Some open boggy areas are present within the forests, usually on flat terraces. Most are dominated by red tussock but some have abundant wire-rush, deer sedge, other sedges, sponge moss, bog-pine and a marginal band of shrubs. Giant dragonflies inhabit these open areas and the holes of their larvae are common in boggy places. The pools in bogs have some interesting invertebrates present, including back-swimmers, water-boatmen and diving beetles, and the larvae of the bright red or blue adult damsel flies, which flit over the surface of the pools.

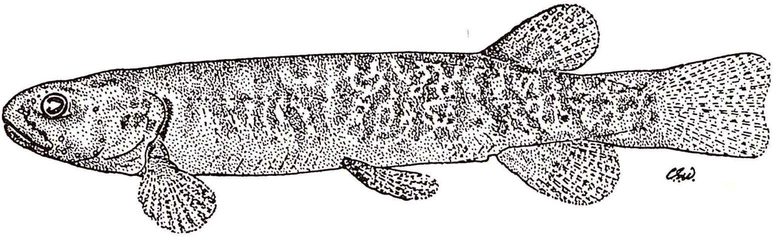
Many minor habitats with distinct flora and fauna are present in the forested zone. One very common habitat is the small stream, pouring over boulder beds or through rocky channels and over waterfalls. Mosses and algae are submerged in the more stable streams but stream margins are also places with distinct communities of mosses and liverworts. Many shrubs and herbs also inhabit the banks of streams, clinging on rock-faces or covering the bouldery ground up to the flood limit.

The streams have a rich fauna of larvae of caddises, stone-flies, mayflies and net-wing midges. Small fish, the fast-swimming galaxias and slower bully hide under the stones in some of the stable streams.

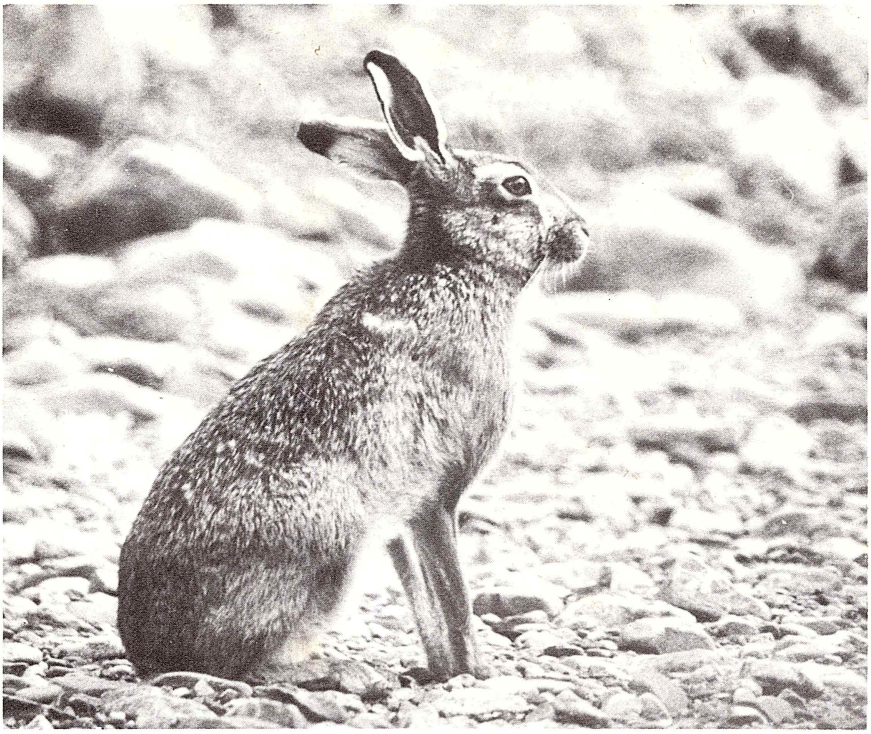
With increase in altitude there is usually little change in species composition of the forest, but at higher levels pale green old man's beard lichen hangs from the gnarled trees and a few shrub species such as subalpine coprosmas, snow totara, hebes and one-flowered turpentine bush appear. They are the main species of the narrow, discontinuous band of brown subalpine scrub found above the forest.

The timberline is marked by the stunting of trees which reach an abrupt limit at about 1280 m. The subalpine scrub above this contains not only the shrubs noted previously but also large tussocks of the broad-leaved snowgrass. The scrub gradually grades into the shorter alpine grasslands.

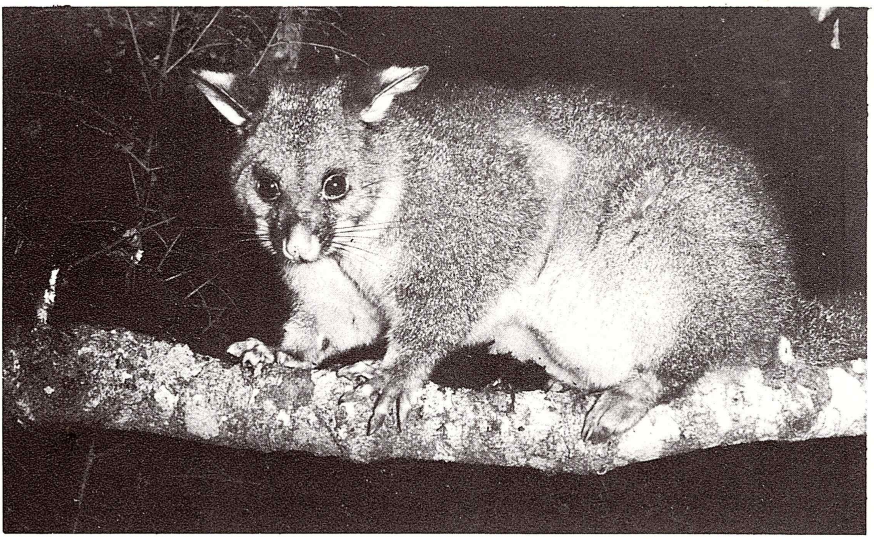
One of the glories of the Park is the alpine vegetation and flora. On the easternmost side of the Park the alpine vegetation is characterized by the presence of the small snow tussock and the spear-leaved and viscous alpine daisies. There is a rich assortment of associated plants including blue tussock, anisotomes, spear-leaves, coprosmas, violets, snowberries, willow-herbs, gentians small hardfern, mountain clubmoss and many others including mosses, liverworts and lichens. Variations in the vegetation occur according to habitat differences. Some of the most interesting plants, including vegetable sheep, are present on rock outcrops. Vast screes are present, apparently bare of life. On closer inspection grey plants are noted including the large yellow scree buttercup, the scree chickweed, black daisy and various lichens.



A mountain galaxias *(Galaxias vulgaris).* After C. S. Woods

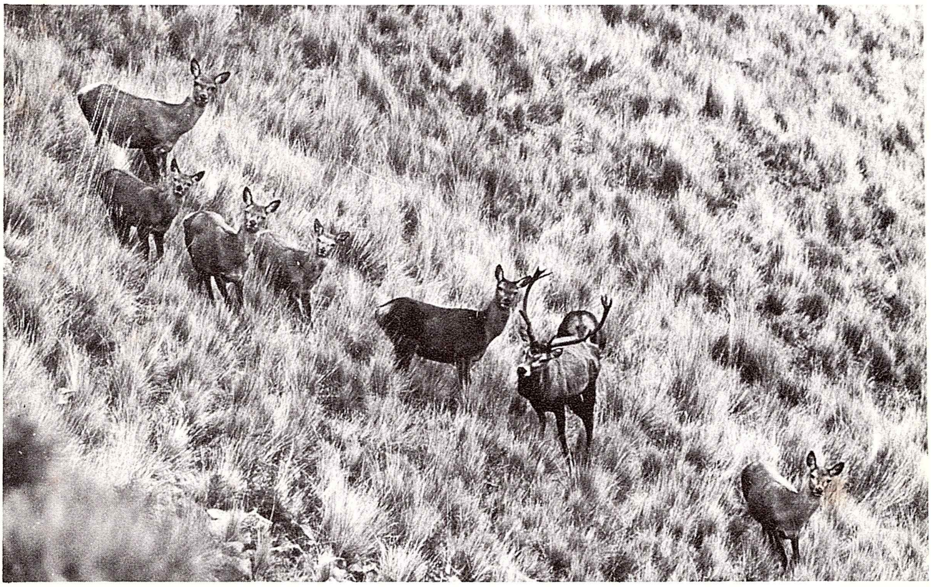


Hare *(Lepus europaeus)* J. H. Johns, N.Z. Forest Service

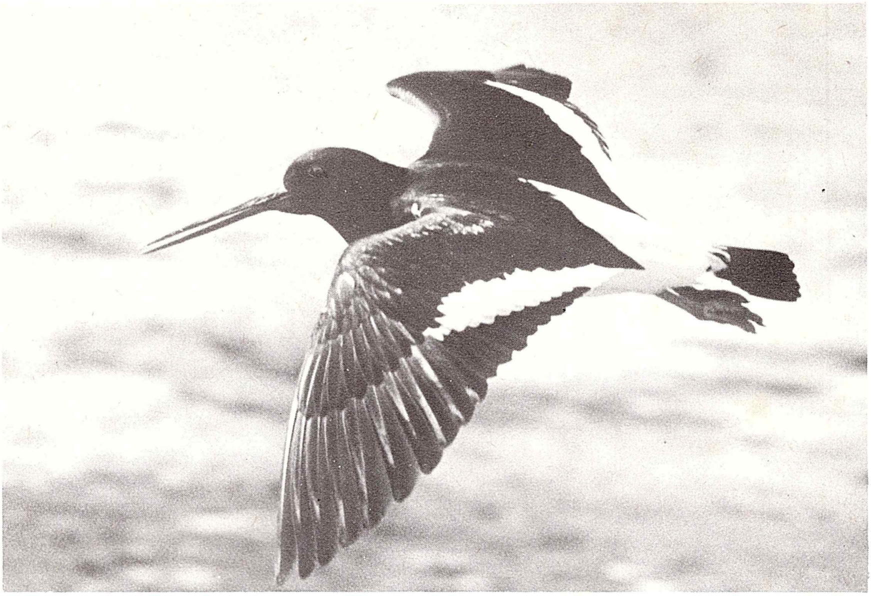


Brush-tailed Possum *(Trichosurus vulpecula)* J. H. Johns, N.Z. Forest Service

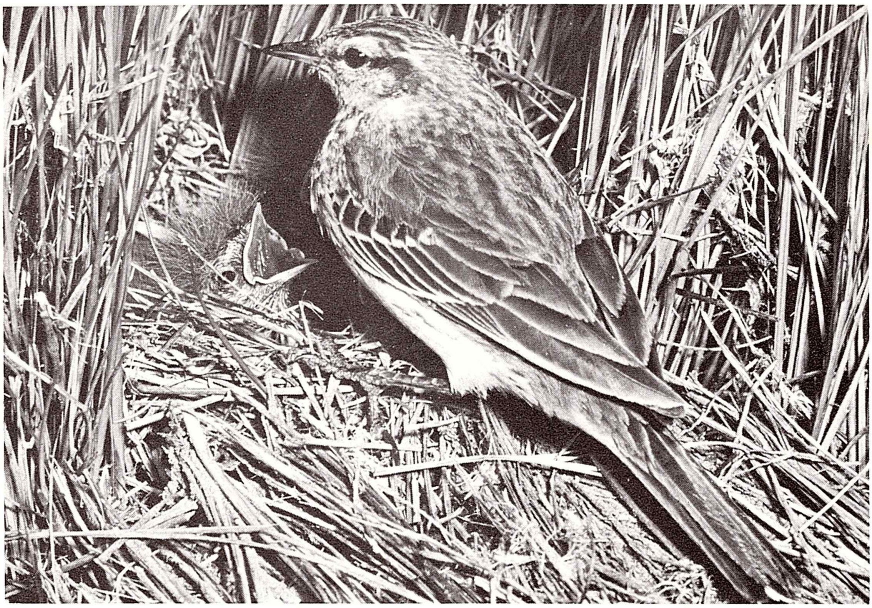
Chamois *(Rupicapra rupicapra).* J. H. Johns, N.Z. Forest Service



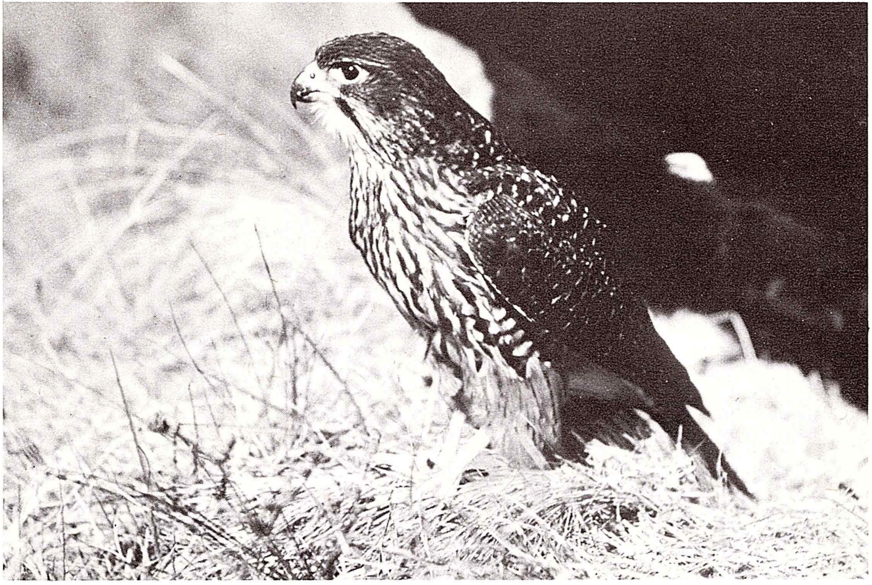
Red Deer *(Cervus elephas).* J. H. Johns, N.Z. Forest Service



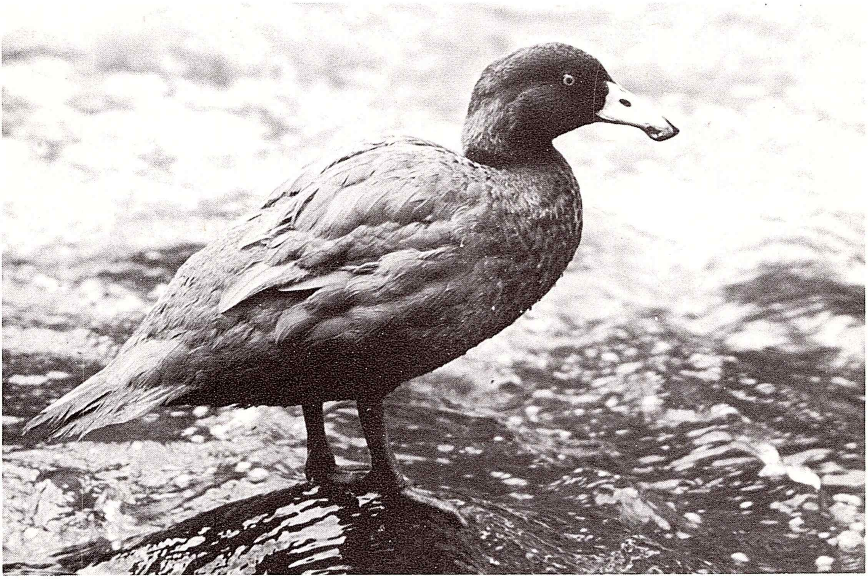
Pied Oyster Catcher. *(Haematopus ostralegus).* M. F. Soper



Pipit *(Anthus novaeseelandiae).* M. F. Soper

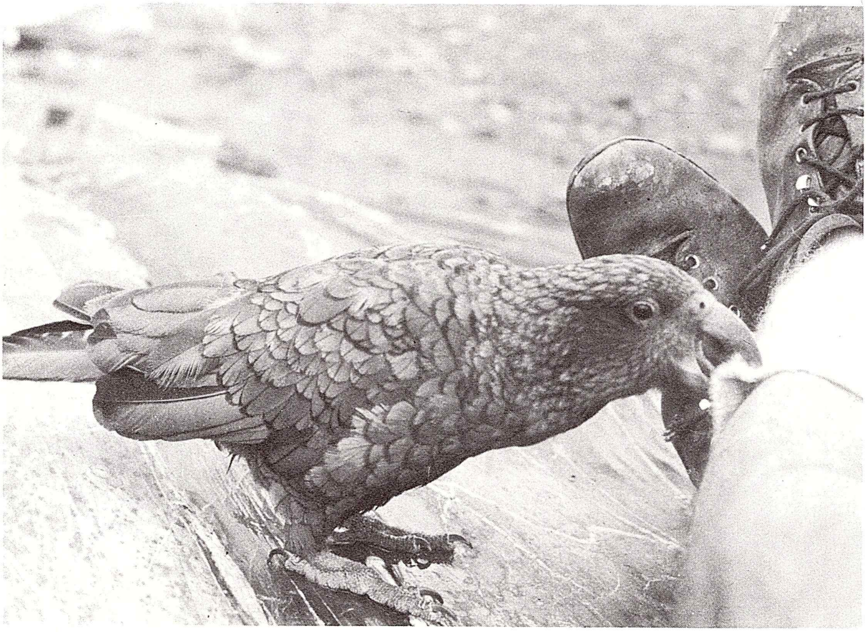


New Zealand Falcon *(Falco novaeseelandiae).* M. F. Soper



Blue Duck *(Hymenolaimus malacorhynchos).* M. F. Soper

Wood Pigeon *(Hemiphaga novaseelandiae)* on nest. M. F. Soper



Kea *(Nestor notabilis)* up to mischief. T. Chinn

MAIN DIVIDE AND ARTHURS PASS

Nearer the main divide the midribbed snowgrass, curly grass and armstrong's and grey-leaved alpine daisies replace the more easterly species in the alpine vegetation. Many other plants are present which can inhabit the poorly-drained soils. They include several astelias, geums, forsteras, ourisias, comb sedge, pigmy pine and small heaths, but blue tussock and some other eastern species are also present.

Boggy areas containing deer sedge, plume sedge, bog cushion and comb sedges are common near the divide. At higher altitudes, in areas where the snow lies late, the short vegetation includes the little snow patch grass, alpine cushion and diesel rush. On wind-swept knolls occur the tight mats of prostrate dracophyllum and grey pygmea cushions. About 1770 m all continuous vegetation stops and above this are barren rocks and boulderfields with only a sparse plant cover except for lichens and patches of grey haastia or bright-green hectorella. Beyond the rocky barrens are the snowfields.

Alpine animal life is richest among the invertebrates. Cicadas are very numerous, as are moths and large grasshoppers, camouflaged according to their habitat. Flies of many kinds including crane-flies and bristle-flies, are present. There are weevils, wetas, and green beetles. Drifting like falling leaves down the screes, are black butterflies; or among the grass, the black, brown and orange tussock butterflies. Virtually the only common species of birds are pipits and keas. The comical, untidy-looking kea, with olive green head and back, blue-green upper wing, orange under-wing, and raucous cry, is abundant in the Park and inhabits forests as well as the tops in summer. It may often be seen near the village or at Temple Basin, flying overhead, perching on roof tops foraging in rubbish pits. Of special interest at high altitude is the scarcer rock wren, with smooth, green plumage, muted cry and bobbing habit. A well camouflaged grey lizard, a gecko, occurs rarely in the alpine zone.

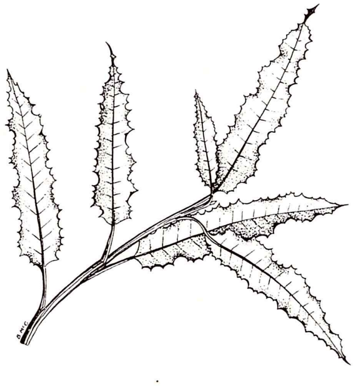
Mammals of the alpine zone include hares, red deer and chamois. They compete for grazing with the native animals such as grasshoppers and, though attractive, are regarded as pests in the Park

Descending to the valleys again, on the traverse up the Bealey Valley to the top of Arthurs Pass the species composition of the forest becomes richer as the main divide is approached. The understorey of shrubs becomes denser with the addition of numerous coprosmas, linear lancewood, three-finger and hebes and there is often an abundance of herbs, hard-fern, shield fern and bush-lilies, as well as a very rich development of lichens, mosses and liverworts both on the forest floor and on the trees. Groves of mountain ribbonwoods are common on bouldery sites. In boggy places pink pine, long-leaved turpentine bush and manuka are prominent. The lower forest margin is rimmed by scrub in which hebes, coprosmas and olearias are prominent. Near timber-line many plants of the subalpine scrub community also occur in the forest.

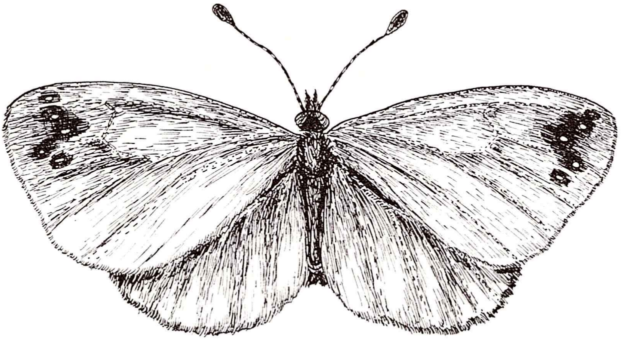
On Arthurs Pass, though it is much disturbed by fire, a great variety of types of subalpine scrub occur. The most striking plants are the big nei-neis. Their relatives the turpentine bushes are important cover plants, along with ribbonwoods, mountain flax, senecios, mountain holly and other olearias, cassinia, hebes, coprosmas and celery pine. Broadleaved snowgrass, thick-leaved snowberry and hard-fern are always important and there is often an admixture, in the more open positions, of attractive flowering herbs. The large white-flowered buttercup, ourisas-alpine daisies and snowy senecio are the most obvious but there are many other attractive flowering plants of which mountain ribbonwood, mountain holly, thick-leaved snowberry and red and green-flowered mountain flax are some of the most beautiful.

The Pass has a very mixed vegetation cover, including grassy and herbacous communities grading into scrub, but bogs are prominent. The common plants are red tussock, deer sedge, plume sedge, sundews, heaths and the tight-growing cushion plants comb sedge and bog cushion. Also present are the tiny, blue-flowered bladderwort, pigmy pine and the beautiful coral lichens. The bogs are attractive when these small plants flower.

The roadside through Arthurs Pass Village and down the Otira Gorge has a cover of introduced grasses and weed plants such as white-flowered ox-eye daisies and yellow lotus as well as two small native species of tutu. In the Gorge many of the impressive rock walls, dripping with small seepages, carry mats of liverworts and mosses, and everlasting daisies and the large tutu are prominent.



Mountain holly *(Olearia ilicifolia)* B. McCulloch



Percnodaimon pluto, black scree butterfly. V. L. Burrows

WESTERN VALLEYS

Descending the Otira Gorge into the Westland valleys, major differences between eastern and western vegetation become apparent. We may start with the valley floors in the lower Otira or Taramakau Valleys. The western riverbeds differ from the eastern ones, by having a cover of the weeds gorse and broom. Open riverbed is not so prominent as on the east. Kanuka borders some of the forest and olearias or tree tutu are common at the forest edge. Boulders in the stream beds are coated with red rock alga.

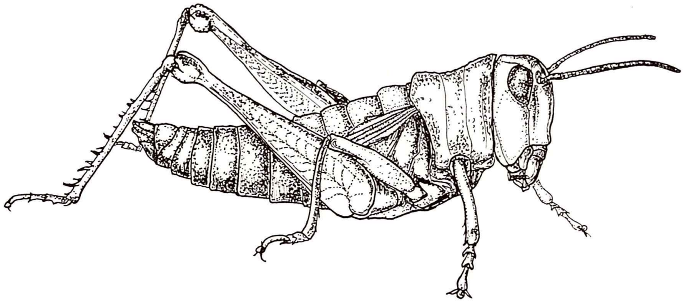
Some of the river flood-plains are inhabited by dense, tall podocarp forest in which matai and kahikatea 25-30 m tall are the main species. Associated species are kamahi, broadleaf, fuchsia, marble-leaf, lowland ribbonwood, some coprosmas, pepperleaf and other shrubs. Tree nettle occurs uncommonly. Some of the flats carry stands of large, old red beech. On the lower slopes the forest may be more varied but the podocarps are rather scattered and the general forest canopy is about 22-25 m in height. Matai and kahikatea are present but miro also occurs and rimu becomes quite common. Kamahi and quintinia are the important canopy trees and tree ferns form conspicuous stands. The forest undergrowth is both dense and rich in species. The many understorey species include the shrubs coprosmas, myrtle and pepper leaf and the trees one-finger, whiteywood, lemonwood and marble-leaf. Climbers and vines include small white rata, lawyers and clematis.

A striking contrast to the eastern forests is evident in the fern flora. Many species of filmy fern inhabit the ground and the tree trunks. Several species of large hard-ferns and spleenworts and various other plants including a profusion of mosses and liverworts cover the ground. On the trees epiphytes are abundant including some ferns and flowering plants such as orchids and many species of moss, large foliose lichens and liverworts. Most of these smaller plants are quite different from those inhabiting the eastern beech forests.

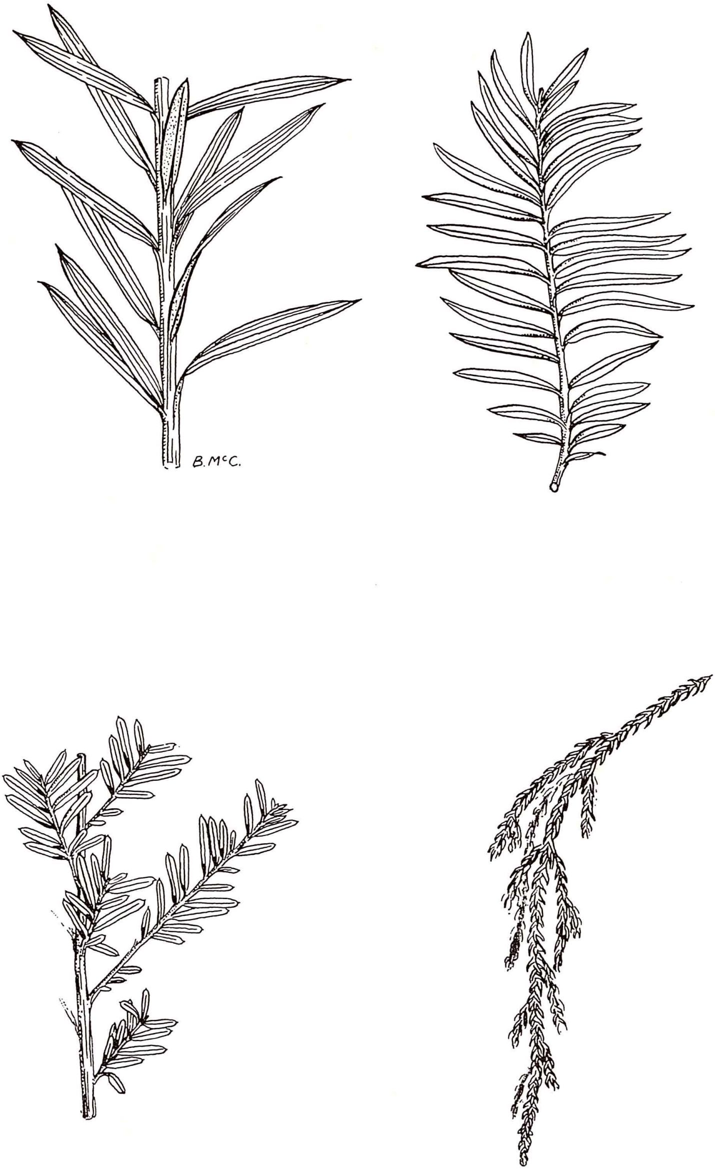
On the mid-slopes of the valleys the lowland podocarps are no longer present and rata and mountain totara become abundant. The canopy is only about 12 — 15 m high. Near timberline, at about 1060 m, kamahi is no longer present but species such as nei-nei, cedar and pink-pine become common, along with many shrubs found in the subalpine scrub. Large stands of ribbonwoods occur on slips. The subalpine scrub belt above the forest proper is up to 150 m wide, and its species' composition is similar to that on Arthurs Pass with the exception that leather-wood is present and very important in the vegetation.

The invertebrate fauna of the Westland forests differs from the east in its species composition, yet the same major groups of animals are present. Brush-tailed possums are very much more abundant. They are causing spectacular damage to the forests by browsing and the grey tops of large dead rata trees are plainly evident as a result. In the subalpine forest and scrub, deer and chamois also are responsible for considerable damage. The introduced brown rat is common and its hoards of miro seeds are often found at the bases of trees.

Birdlife on the west is enriched by the presence of several more species than on the east, including the attractive large wood pigeon, shining cuckoo and tui, and there are more numerous kaka, parakeets and yellowheads. Nocturnal moreporks repeat their eerie cry. Several bird species are now extinct. They include the orange-wattled crow or kokako and the weka (gradually reinvading the area from the north). Probably other birds such as



An alpine grasshopper *(Brachaspis collinus).* V. L. Burrows

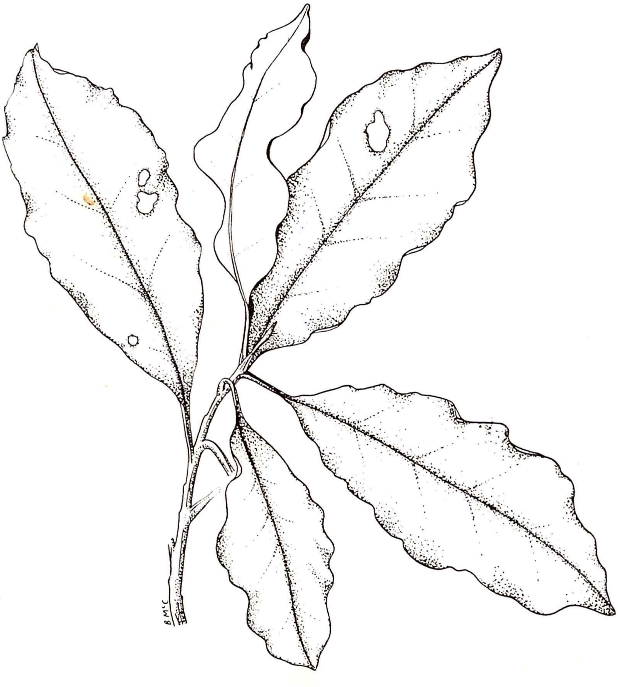


Tree podocarps in the Park. From top left mountain totara, *(Podocarpus hallii)*, miro *(P. ferrugineus)*, matai *(P. spicatus)* and rimu *(Dacrydium cupressinum)*.
B. McCulloch

species of moa and the kakapo were also present formerly, but there is no positive evidence.

The alpine vegetation on the west is very similar to that just east of the main divide, though a stunted version of curly-grass vegetation is more abundant on the waterlogged soils. The tops of the upper Taramakau and upper Poulter Valleys form the southern boundary of an important species, carpet grass, which occupies extensive areas there and further north. Several other northern species are associated with it, including a gentian, a buttercup and, on rock outcrops, giant vegetable sheep.

Finally, mention may be made of the lakes, such as Kaurapataka. Submerged plants include millfoil, potamogeton and quillwort and there are emergent marginal sedges. The birdlife includes grey duck, scaup, black shag and the rarer crested grebe. Galaxius and bullies are numerous but the largest fish is the eel, particularly abundant in Kaurapataka. The invertebrate animal groups are similar to those in the streams, though the species differ, but the little black water snail and fresh-water mussel are prominent.



Quintinia *(Quintinia acutifolia)* B. McCulloch

TECHNICAL NAMES OF PLANTS AND ANIMALS

(These lists are not comprehensive but include common species in the different habitats listed mainly in order of their mention in the text).

EASTERN VALLEYS

RIVERBEDS AND TUSSOCK FLATS

PLANTS

Herbs	
mat daisies	*Raoulia tenuicaulis*
	R. haastii
willow herb	*Epilobium melanocaulon*
hard tussock	*Festuca novae-zelandiae*
blue tussock	*Poa colensoi*
mat daisy	*Raoulia subsericea*
mat coprosma	*Coprosma petriei*
cyathodes	*Cyathodes fraseri*
dwarf pohuehue	*Muehlenbeckia axillaris*
harebell	*Wahlenbergia albomarginata*
browntop	*Agrostis tenuis*
sweet vernal	*Anthoxanthum odoratum*
Shrub	
matagouri	*Discaria toumatou*
Moss	
shaggy moss	*Racomitrium lanuginosum*

ANIMALS

Birds	
pipit	*Anthus novaeseelandiae*
paradise duck	*Tadorna variegata*
black-fronted tern	*Chlidonius hybrida*
banded dotterel	*Charadrius bicinctus*
pied oyster catcher	*Haematopus ostralegus*
harrier	*Circus approximans*
canada goose	*Branta canadensis*
black-backed gull	*Larus dominicanus*
Mammal	
hare	*Lepus europaeus*
Insects	
cicadas	*Kikihia spp.*
	Maoricicada spp.
blowflies	*Calliphora spp.*
flesh fly	*Sarcophaga sp.*
bristle flies	*Protohystricia spp.*

moths	*Oreocrambus sp.*
	Scoparia spp.
	Gelophaula sp.
	Wiseana spp.
	Dasyuris spp.
shield bugs	Many species
cricket	*Nemobius sp.*
solitary bees	*Halictus spp.*
small purple butterfly	*Lycaena boldenarum*
orange butterfly	*L. salustius*
red spider-hunting wasp	*Salius sp.*
tiger beetle	*Neocicindela austromontana*

Spiders

hunting spiders	*Lycosa spp.*
nursery spiders	*Dolomedes spp.*

FOREST

PLANTS

Trees

mountain beech	*Nothofagus solandri var. cliffortioides*
red beech	*N. fusca*
silver beech	*N. menziesii*
cedar	*Libocedrus bidwillii*
mountain totara	*Podocarpus hallii*
broadleaf	*Griselinia littoralis*

Shrubs

celery pine	*Phyllocladus alpinus*
coprosmas	*Coprosma "parviflora"*
weeping mapou	*Myrsine divaricata*

Herbs

hook sedges	*Uncinia spp.*

Ferns

shield fern	*Polystichum vestitum*
hard fern	*Blechnum minus*

Mosses (on ground)

	Dicranoloma spp.
	Ptychomnion aciculare
	Dendroligotrichum dendroides
	Acrocladium auriculatum
(on trees)	
	Hypnum cupressiforme
	Macromitrium spp.
	Leptostomum inclinans

Liverworts (on trees)

	Frullania spp.

Lichens (on trees)

	Menegazzia spp.
	Sphaerophorus spp.
	Pertusaria spp.
	Pseudocyphellaria spp.
	Parmelia spp.
	Collema sp.

ANIMALS

Mammals

mouse	*Mus domesticus*
stoat	*Mustela erminea*
red deer	*Cervus elephas*
brush-tailed possum	*Trichosurus vulpecula*

Birds

bellbird	*Anthornis melanura*
silvereye	*Zosterops lateralis*
fantail	*Rhipidura fuliginosa*
tomtit	*Petroica macrocephala*
brown creeper	*Finchsia novaeseelandiae*
grey warbler	*Gerygone igata*
rifleman	*Acanthisitta chloris*
long-tailed cuckoo	*Eudynamis taitensis*
blackbird	*Turdus merula*
chaffinch	*Fringilla coelebs*
dunnock	*Prunella modularis*
redpoll	*Carduelis flammea*
bush hawk	*Falco novaeseelandiae*
blue duck	*Hymenolaimus malacorynchos*
spotted kiwi	*Apteryx haastii*
yellowhead	*Mohoua ochrocephala*
yellow-crowned parakeet	*Cyanoramphus auriceps*
kaka	*Nestor meridionalis*
robin	*Petroica australis*

Insects

sandfly	*Austrosimulium spp.*
blowfly	*Calliphora quadrimaculata*
crane flies	*Leptotarsus spp.*
	Many small flies of various other groups.
moths	*Melanchra spp.*
	Chloroclystis sp.
	Hydriomena sp.
	Wiseana sp.
	Tortrix sp.
	Scorparia sp.
	Many other moths are present.
bees	*Lioproctus sp.*
	Tachysphex sp.
wasp	*Vespula germanica*

ants	*Monomorium sp.*
scale insects	*Eriococcus spp.* *Ultracoelostoma assimile*
weevils	*Platyomida sp.*
other beetles	*Arthystoma sp.* *Nascioides enysii* *Megadromus spp.* *Mecodema spp.* *Diglymma sp.* *Pheloneis sp.* *Odontria hallii* *Platypus sp.*
cicadas	*Kikihia spp.*
wetas	*Hemideina thoracica and others*
cockroaches	*Celatoblatta spp.*
Spiders and their relatives	
mites	Many groups are represented.
spiders	*Chasmocephalon sp.* Many others occur.
harvestmen	*Nuncia spp.*
Other invertebrate groups	
millepedes	*Icosidesmus spp.* Members of the Cambalid group are also present.
centipedes	*Anopsobius sp.*
hoppers	*Orchestia spp.*
flatworms	several species occur.
earthworms	*Octochaetus spp.* *Maoridrilus sp.*
slugs	*Arthoracophorus spp.* *Pseudaneita spp.*
snails	Several small species occur.
peripatus	*Ooperipatus viridimaculatus*

SUBALPINE FOREST AND SCRUB

PLANTS

Shrubs	
coprosmas	*Coprosma pseudocuneata* *C. depressa*
hebes	*Hebe canterburiensis* *H. subalpina*
one-flowered turpentine bush	*Dracophyllum uniflorum*
long-leaved turpentine bush	*D. longifolium*
nei nei	*D. traversii*

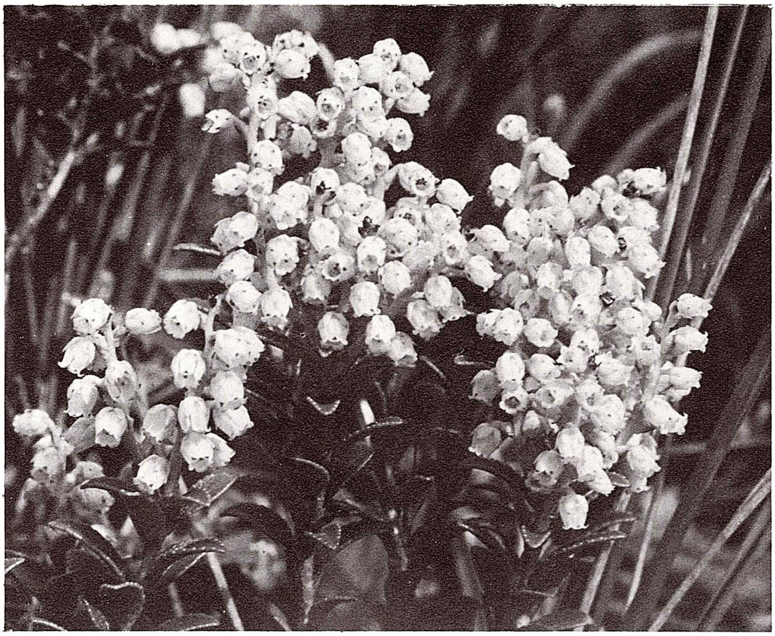
olearias	*Olearia nummularifolia*
	O. lacunosa
mountain holly	*O. ilicifolia*
leatherwood	*O. colensoi*
shrub senecio	*Senecio eleagnifolius*
cassinia	*Cassinia vauvilliersi*
linear lancewood	*Pseudopanax lineare*
three-finger	*P. colensoi*
one-finger	*P. simplex*
mountain flax	*Phormium cookianum*
mountain ribbonwood	*Hoheria glabrata*
pink pine	*Dacrydium biforme*
thick-leaved snowberry	*Gaultheria crassa*
Herbs	
bush lily	*Astelia nervosa*
broadleaved snowgrass	*Chionochloa flavescens*
large white buttercup	*Ranunculus lyallii*
ourisia	*Ourisia macrocarpa*
large alpine daisy	*Celmisia coriacea*
snowy senecio	*Senecio scorzoneroides*
spear-leaf	*Aciphylla scott-thompsonii*
Lichen	
old man's beard	*Usnea sp.*
Mosses	
	Tortula spp.
	Dicnemon spp.
Liverwort	*Chandonanthus squarrosus*

Many cryptogam groups are shared with the western forests.

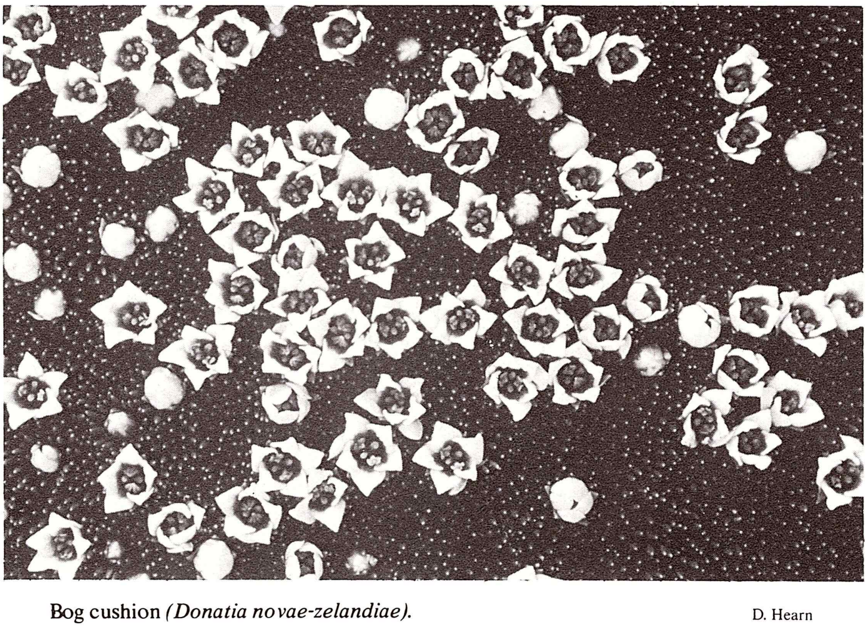
BOGS

PLANTS

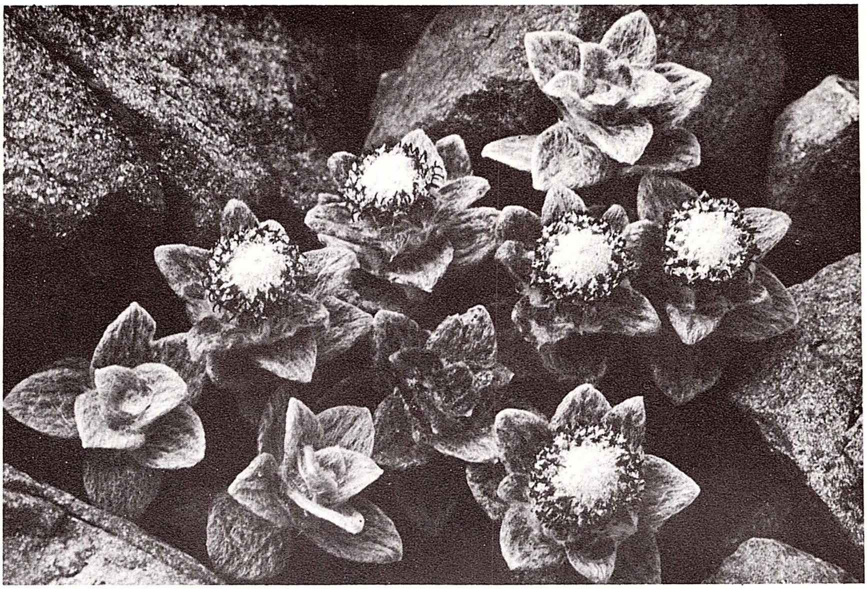
Shrubs	
bog pine	*Dacrydium bidwillii*
pigmy pine	*D. laxifolium*
heaths	*Pentachondra pumila*
	Cyathodes pumila
Herbs	
red tussock	*Chionochloa rubra*
wire rush	*Calorophus minor*
deer sedge	*Schoenus pauciflorus*
sedges	*Carex coriacea*
	C. sinclairii
	C. echinata
comb sedges	*Oreobolus pectinatus*
	O. strictus
plume sedge	*Carpha alpina*
sundews	*Drosera arcturi*
	D. spathulata



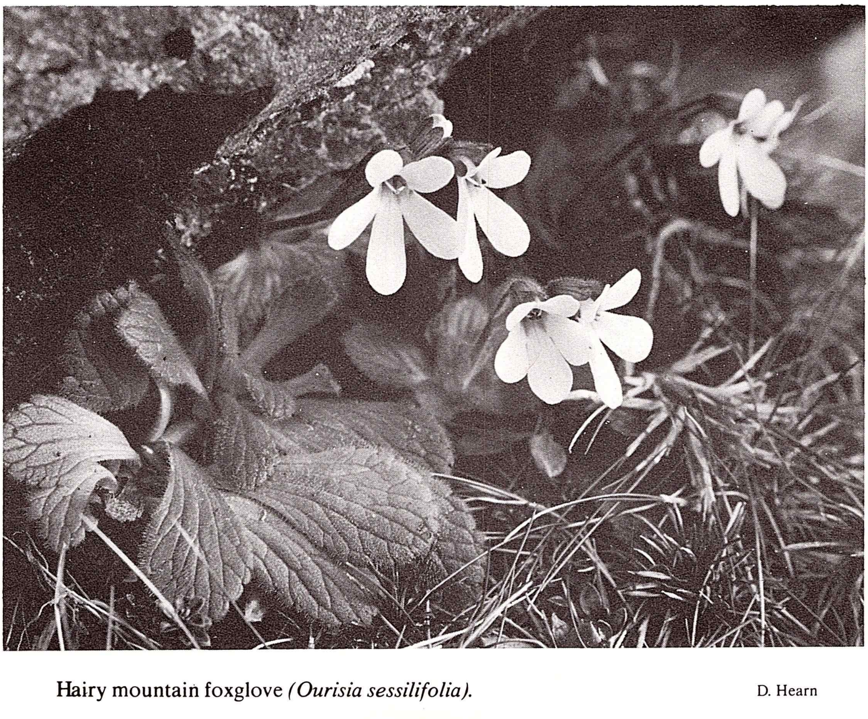
Thick-leaved snowberry. *(Gaultheria crassa).* D. Hearn



Bog cushion *(Donatia novae-zelandiae).* D. Hearn



Stonefield daisy. *(Haastia sinclairii).* D. Hearn



Hairy mountain foxglove *(Ourisia sessilifolia).* D. Hearn

bladderwort	*Utricularia monanthos*
bog cushion	*Donatia novae-zelandiae*
Mosses	
sponge mosses	*Sphagnum cristatum*
	S. falcatulum
	S. australe
Lichens	
coral lichens	*Cladia retipora*
	C. sullivanii

ANIMALS

Insects	
giant dragonfly	*Uropetala chiltoni*
red damsel	*Xanthocnemis sp.*
blue damsel	*Austrolestes sp.*
water boatman	*Sigara sp.*
backswimmer	*Anisops sp.*
diving beetles	*Liodessus sp.*
	Rhantus sp.

RIVERS AND STREAMS

PLANTS *-submerged

Mosses	*Fissidens spp**
	Cyathophorum bulbosum
Liverworts	*Marchantia berteroana*
	Monoclea forsteri

ANIMALS

Fish	
brown trout	*Salmo trutta*
quinnat salmon	*Oncorhynchus tshawytscha*
galaxias	*Galaxias vulgaris*
bully	*Philypnodon spp.*
Insects	(The larvae of these groups inhabit the streams. The adults are often found nearby.)
caddis flies	*Costachorema brachyptera*
	Zelandopsyche sp.
may flies	*Deleatidium spp.*
	Nesameletus sp.
stone flies	*Stenoperla prasina*
	Aucklandobius sp.
	Austroperla cyrene
net-winged midges	*Neocurupira spp.*
sandflies	*Austrosimulium spp.*

ALPINE GRASSLANDS AND BARRENS

PLANTS

Herbs and small shrubs

small snow tussock	*Chionochloa macra*
midribbed snow tussock	*C. pallens*
curly grass	*C. crassiuscula*
snow patch grass	*C. oreophila*
carpet grass	*C. australis*
spear-leaved alpine daisy	*Celmisia lyallii*
viscous alpine daisy	*C. viscosa*
grey-leaved alpine daisy	*C. discolor*
anisotome	*Anisotome aromatica*
spear-leaf	*Aciphylla similis*
coprosmas	*Coprosma cheesemanii*
	C. pumila
violet	*Viola cunninghamii*
snowberry	*Gaultheria depressa*
willow-herb	*Epilobium glabellum*
gentians	*Gentiana corymbifera*
	G. bellidifolia
scree buttercup	*Ranunculus haastii*
scree chickweed	*Stellaria roughii*
black daisy	*Cotula atrata*
geum	*G. uniflorum*
ourisia	*Ourisia caespitosa*
euphrasia	*Euphrasia revoluta*
forsteras	*Forstera tenella*
	F. sedifolia
alpine cushion	*Phyllachne colensoi*
prostrate dracophyllum	*Dracophyllum pronum*
pygmea	*Pygmea pulvinaris*
vegetable sheep	*Raoulia eximia*
giant vegetable sheep	*Haastia pulvinaris*
grey haastia	*H. sinclairii*
diesel rush	*Marsippospermum gracile*
hectorella	*Hectorella caespitosa*

Ferns

small hardfern	*Blechnum penna-marina*

Lycopod

mountain clubmoss	*Lycopodium fastigiatum*

Mosses

black mosses	*Andraea supp.*
shaggy mosses	*Racomitrium spp.*
	Polytrichum spp.

Lichens

Cladonia spp.
Thamnolia vermicularis
Rhizocarpon geographicum
Placopsis spp.
Lecidea spp.
Stereocaulon spp.

ANIMALS

Mammals	
chamois	*Rupicapra rupicapra*
Birds	
kea	*Nestor notabilis*
rock wren	*Xenicus gilviventris*
Reptile	
gecko	*Hoplodactylus sp.*
Insects	
cicadas	*Maoricicada nigra*
	M. cassiope
moths	*Xanthorhoe spp.*
	Crambus spp.
	Notoreas spp.
	Metacrias erichrysa
	Melanchra spp.
	Aletia nullifera
	Mecyna flavidalis
grasshoppers	*Paprides nitidus*
	Brachaspis collinus
	B. nivalis
hoverflies	*Syrphus spp.*
craneflies	*Leptotarsus spp.*
	Macromastix spp.
bristle flies	*Erythronychia spp.*
	Peremptor spp.
	Platytachina spp.
weta	*Deinacrida alpina*
beetles	*Zorion sp.*
	Luperus sp.
	Ceratognathus alboguttatus
green beetle	*Pyronota punctata*
black scree butterfly	*Percnodaimon pluto*
black tussock butterfly	*Erebiola butleri*
brown tussock butterfly	*Argyrophenga antipodum*
shield bugs	*Rhypodes sp.*

OTHER SCRUB, ROADSIDE, ROCKY BLUFFS, RIVERBED ON WEST SIDE.

PLANTS

Shrubs	
manuka	*Leptospermum scoparium*
kanuka	*L. ericoides*
olearia	*Olearia avicenniaefolia*
tree tutu	*Coriaria arborea*
gorse	*Ulex europaeus*
broom	*Cytisus scoparius*
hebe	*Hebe salicifolia*

Rata *(Metrosideros umbellata)*, on the Otira Gorge zig-zag. C. J. Burrows

Kamahi *(Weinmannia racemosa)*. C. J. Burrows

Herbs

subalpine snowgrass	*Chionochloa conspicua*
tutu	*Coriaria sarmentosa*
	C. angustissima
yellow lotus	*Lotus uliginosus*
oxeye daisy	*Chrysanthemum leucanthemum*
everlasting daisy	*Helichrysum bellidioides*
	Gnaphalium trinerve

Fern

bracken	*Pteridium esculentum*

Lichen	*Stereocaulon spp.*

Alga

red rock alga	*Trentepohlia sp.*

WESTERN VALLEYS

PLANTS

FOREST (Many species of plants and animals of the eastern valleys appear here also)

Trees

matai	*Podocarpus spicatus*
kahikatea	*P. dacrydioides*
miro	*P. ferrugineus*
mountain totara	*P. hallii*
rimu	*Dacrydium cupressinum*
kamahi	*Weinmannia racemosa*
fuchsia	*Fuchsia excorticata*
marble-leaf	*Carpodetus serratus*
quintinia	*Quintinia acutifolia*
aromatic one-finger	*Pseudopanax edgerleyi*
whiteywood	*Melicytus ramiflorus*
lemonwood	*Pittosporum eugenioides*
kohuhu	*P. colensoi*
lowland ribbonwood	*Plagianthus betulinus*
red rata	*Metrosideros umbellata*

Shrubs

coprosmas	*Coprosma rhamnoides*
	C. colensoi
	C. foetidissima
pepperleaf	*Pseudowintera colorata*
myrtle	*Neomyrtus pedunculata*
tree nettle	*Urtica ferox*

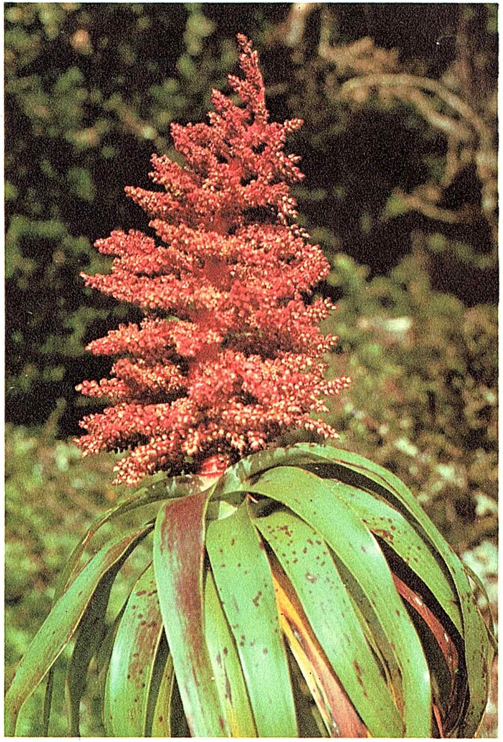
Vines

small white rata	*Metrosideros diffusa*
lawyer	*Rubus cissoides*
clematis	*Clematis paniculata*

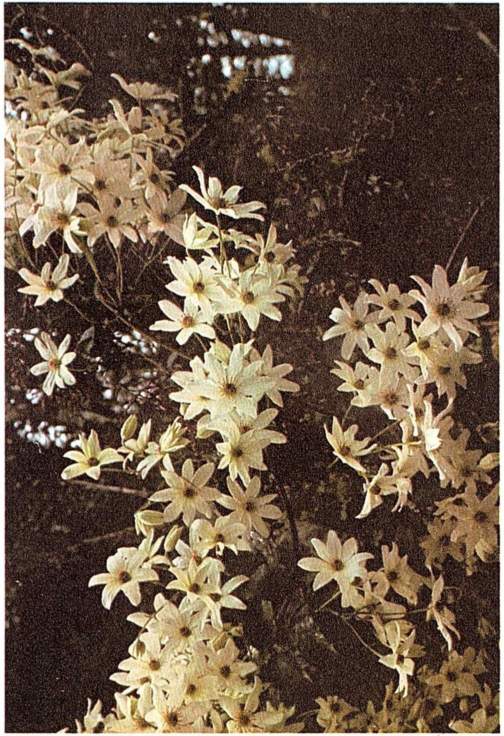
Ferns	
treefern	*Cyathea smithii*
small treefern	*C. colensoi*
treefern	*Dicksonia squarrosa*
filmy ferns	*Hymenophyllum multifidum*
	H. demissum
	H. flabellatum
	H. rarum
	H. villosum
hard ferns	*Blechnum "procerum"*
	B. discolor
	B. fluviatile
	B. colensoi
spleenworts	*Asplenium bulbiferum*
	A. flaccidum
prince of wales feather	*Leptopteris hymenophylloides*
tongue fern	*Phymatodes diversifolium*
water fern	*Histiopteris incisa*
Mosses (on ground)	
	Bryum spp.
	Hypopterygium spp.
	Leucobryum candidum
	Thuidiopsis spp.
	Atrichum spp.
	Hypnodendron spp.
	Sciadocladus spp.
	Mnium spp.
(on trees)	
	Camptochaete spp.
	Cladomnion eriocoides
	Lopidium hispidum
	Orthorrhyncium elegans
	Weymouthia mollis
	W. cochlearifolia
Liverworts (on ground) Many are also present in subalpine forest and wetter eastern forest near the main divide.	*Bazzania spp.*
	Chiloscyphus spp.
	Lepidolaena spp.
	Lepidozia spp.
	Lophocolea spp.
	Plagiochila spp.

ANIMALS

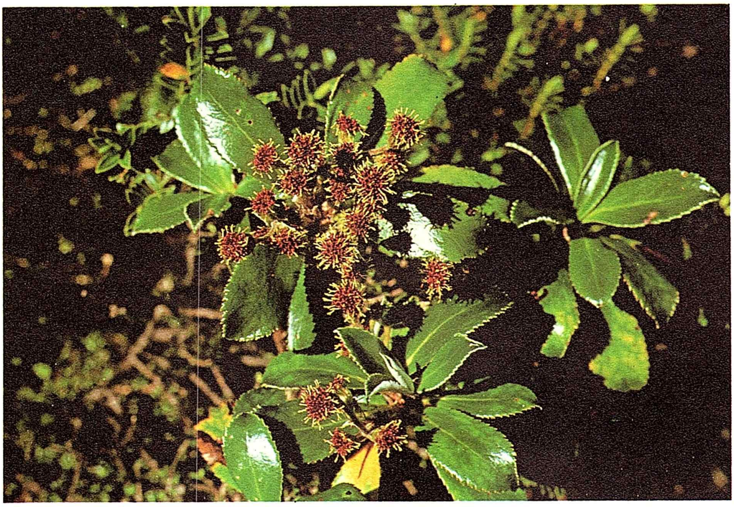
Mammals	
brown rat	*Rattus norvegicus*
Birds	
wood pigeon	*Hemiphaga novaeseelandiae*
shining cuckoo	*Chalcites lucidus*
tui	*Prosthemadera novaeseelandiae*
morepork	*Ninox novaeseelandiae*
Extinct birds	
weka	*Gallirallus australis*
kokako or orange-wattled crow	*Callaeas cinerea*



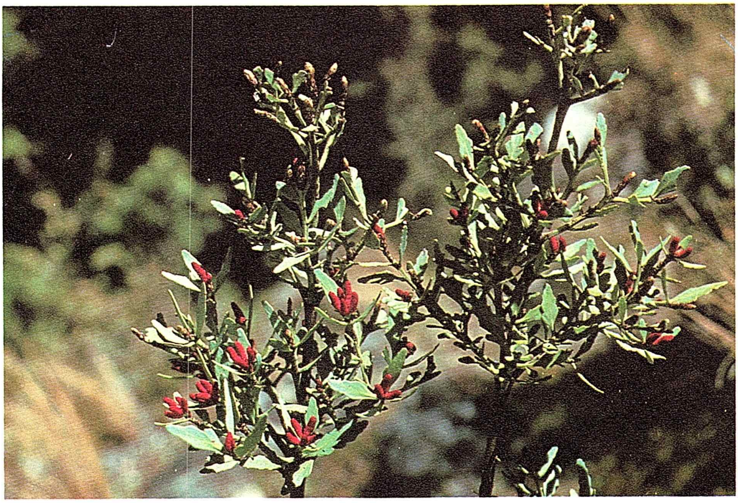
Nei nei *(Dracophyllum traversii)* C. J. Burrows



White clematis *(Clematis paniculata)* C. J. Burrows



Leatherwood *(Olearia colensoi)* C. J. Burrows



Celery pine *(Phyllocladus alpinus)* C. J. Burrows

Invertebrates

The same major groups of invertebrate animals occur as in the eastern forests but the species often differ.

LAKES

PLANTS

millfoil	*Myriophyllum propinquum*
potamogeton	*Potamogeton cheesemanii*
quillwort	*Isoetes alpinus*

ANIMALS

Birds

grey duck	*Anas superciliosa*
scaup	*Aythya novaeseelandiae*
black shag	*Phalacrocorax carbo*
crested grebe	*Podiceps australis*

Fish

eel	*Anguilla sp.*

Molluscs

freshwater mussel	*Hyridella sp.*
small black snail	*Potamopyrgus sp.*

Insects
The same groups are present as in streams but the species differ. Midges or gnats (Chironomids) are very abundant.

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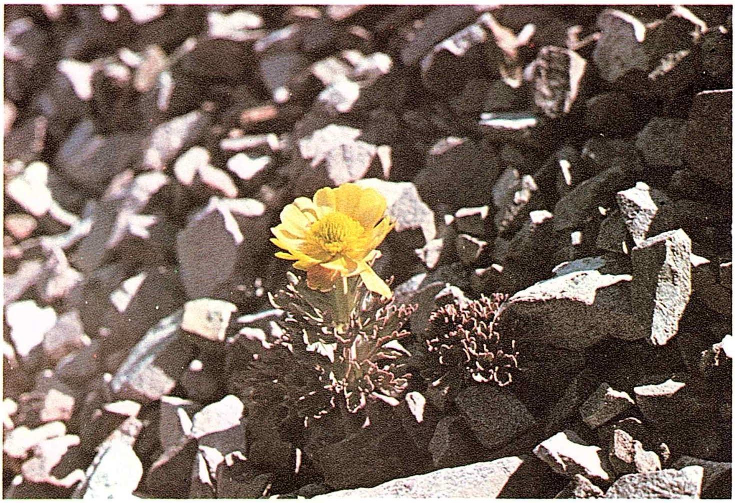
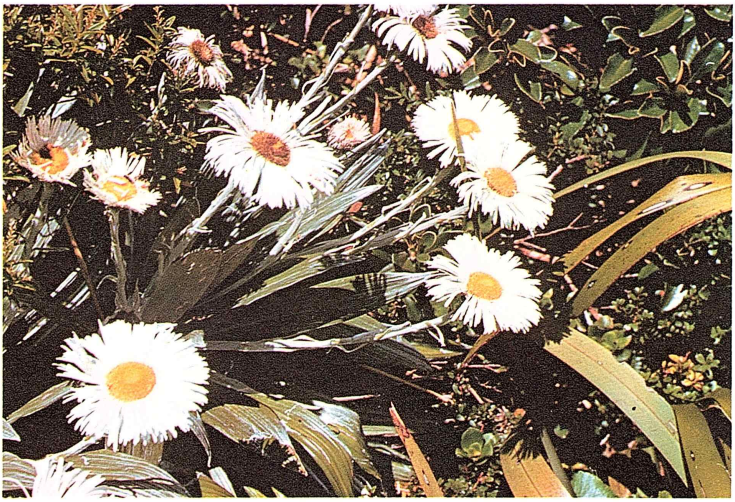
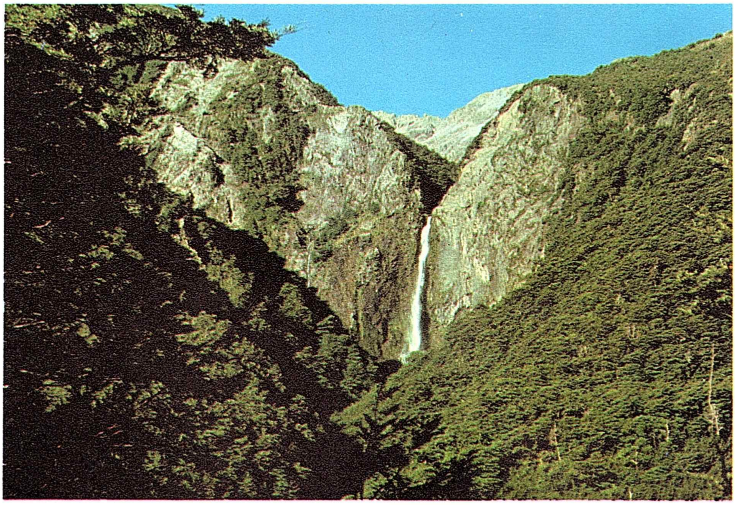


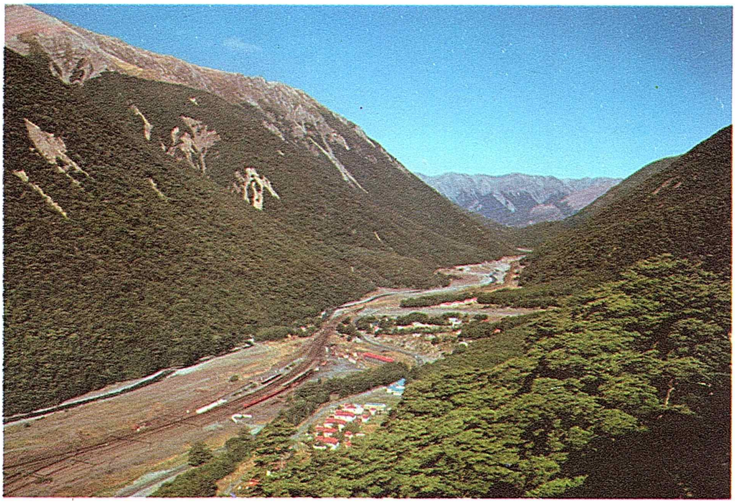
Scree buttercup *(Ranunculus haastii)*. C. J. Burrows



Large mountain daisy *(Celmisia coriacea)* C. J. Burrows



Devil's Punchbowl waterfall, Arthurs Pass. Height 150 m. C. J. Burrows.



The Bealey Valley and part of Arthurs Pass settlement. C. J. Burrows.

RECREATION

Perhaps in no other New Zealand national park is there such varied and readily-accessible opportunity for mountain enjoyment. From the icefalls and perpetual snow of the high peaks to the bush and river-flats of the lower levels, there is endless scope for physical endeavour or quiet appreciation. Sealed roads on both sides of the mountains, a good rail service and well-maintained foot-tracks put the beauties of the Park within everybody's reach.

The centre of activities in Arthurs Pass National Park is the village with its permanent population of railway and road workers, Park Rangers and owners of services and shops. Most of the buildings in the village, however, are holiday cottages. Tearooms attached to the store and a licensed restaurant are among the township's amenities. The land on which most of the village is built is, in fact, not part of the Park.

The settlement of Arthurs Pass originally served the road traffic across the Pass and then, from 1907 to 1923 was a construction town during the excavation of the Otira tunnel. Its resort function began when some of the construction huts were sold to the public and some of these old buildings still survive.

A satellite resort settlement just outside the boundary of the Park is that at the Bealey Spur, not far from the old Bealey Hotel site.

Visitors seeking information should go to Park Headquarters where the duty Ranger will discuss anything concerning the Park and where books, pamphlets and maps are available. The Alpine Museum displays highlights of the Park. Park Headquarters is the centre for search and rescue operations and a radio transmitting service.

Comprehensive holiday programmes organised by Park Rangers, provide interpretation for thousands of visitors yearly, through guided walks, lectures and films. Participants in the Park's popular summer adventure camps, for boys (and, from 1973, for girls) from 10 to 13 years, are chosen by ballot and instruction is given in everything from cooking and first-aid to river-crossing and survival.

Other mountain education courses are run for the Canterbury Education Board by Mr W. Freaney and his staff from the Arthurs Pass Outdoor Education Centre (formerly Arthurs Pass Lodge) (40 beds). The courses, for groups of primary school children from throughout the Canterbury Education district, take two forms. Throughout the year field projects in biology, geology, history, art and other subjects are run as part of the ordinary school class activities. School-teachers take an active part. During vacation courses of mountaincraft and ski weeks are held. There is close collaboration with Park Rangers and many programmes include a visit to the Park Headquarters and a talk by a Ranger. The Centre does not generally provide casual accommodation. Bookings are made through the Education Board Office.

Base huts, in most cases for members only, but which may be let to school parties and the like, are maintained in the township by the New Zealand Alpine Club, the Canterbury Mountaineering Club, the Christchurch Tramping Club, the University of Canterbury Students Association and the West Coast Alpine Club, and from them frequent mountain and bushcraft instruction courses are run, often involving groups outside the membership of these clubs. During August and September accredited instructors conduct ski schools at Temple Basin, under the aegis of the Christchurch Ski Club and the University of Canterbury Ski Club, from their huts on the ski-field. A 48-bunk Youth Hostel is situated opposite the store and increasing numbers of High Schools and allied groups are establishing buildings in the township. Casual accommodation for small numbers may be obtained by contacting Mr J. Ackland or the Senior Ranger, Mr J. Charles.

At the Hawdon River Christchurch Boys High School and St Margarets College maintain buildings suitable for field studies and recreation and the former may be let to other schools.

Accommodation is available in summer in the Temple Basin ski huts for organization such as schools.

(See p.101 which includes the addresses of the Clubs and other organisations which have accommodation in the Park.)

The nearest well-equipped camping grounds to Arthurs Pass are at Christchurch on the east (150 km away) and Hokitika and Greymouth on the west (95 km away) but a site is being prepared at Jacksons 24 km to the west. Camping by motorists is not encouraged in the Park as no facilities can be provided. The railway township of Otira is the other centre adjacent to the Park but the only public accommodation available is at the licensed Terminus Hotel. The public amenities include a garage, tea-rooms and a store.

Refer to the sections on walks, tramping, hunting and climbing in the Park for details about these activities.

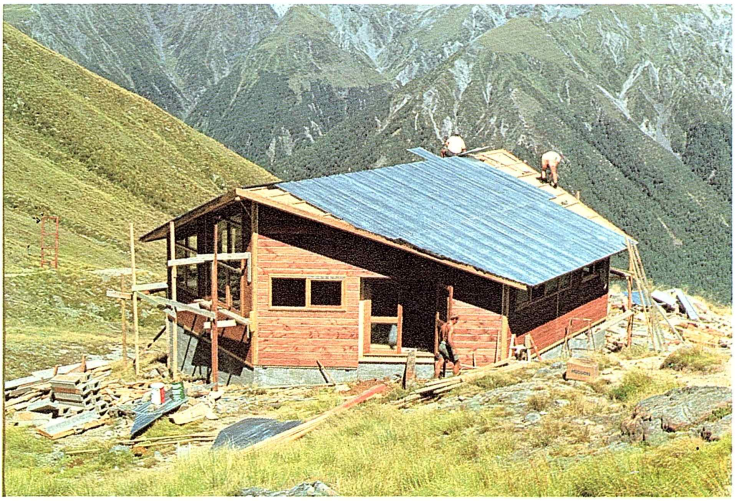
THE CHAPEL

The interdenominational chapel stands in a quiet corner of the township, screened by trees, with the cascade of Avalanche Creek as a backdrop. The completed chapel was dedicated on Easter Monday, 1956, before a congregation of 1500. The chapel is the fruit of three years' work by a committee representing the churches within the National Council of Churches, members of Canterbury and

Poulter valley and beech forest from the Snowcup Range. C. J. Burrows.

Lowland forest at Kellys Creek with podocarps and broadleaved species.
C. J. Burrows

Boys' adventure camp. River crossing. J. O. Charles.



Building the George Lockwood Shelter, Temple Basin. J. O. Charles.

Westland mountain clubs and other interested persons. $10,000 was raised by appeal and a maintenance endowment fund established. Much of the furnishings and incidental necessities were donated; the lectern and communion-rail, for instance, were given by the family of Mr Samuel Russell, who lost his life on Mt Avalanche in 1933, and the font, supported on children's skis, by the Christchurch Ski Club. Upstream from the Chapel, a stone bridge over Avalanche Creek commemorates a foundation member and secretary of the committee, Mr Jim Glasgow, who in 1960, with his climbing companion Mr Harry Scott, fell to his death on Mt Cook.

SKI-ING

The base for the first ski-ing in the Arthurs Pass area was the historic Arthurs Pass Hotel, (now the Lodge), which opened in 1926 under the ownership of Guy Butler, who also owned Jack's Hut. The building was composed of the Public Works dining-rooms, left by the tunnel-workers, and an old school-house brought over from Otira. The first ski-ing was done outside the Lodge, by women guests on seven-foot Norwegian hickory skis, in the winter of 1927. Skiers soon graduated to the run down the road and even down the Otira Gorge. When Oscar Coberger came to Arthurs Pass in 1929 as an alpine guide and ski-instructor, he brought with him a stock of imported skis, and by his unmatched ski-ing and technical expertise created widespread enthusiasm for the new sport.

The Christchurch Ski Club was formed in the winter of 1929 with a membership of 76, and in 1933, after a long period of voluntary labour and with the assistance of a Park Board grant, a 16-bunk hut was erected on the Temple Basin ski-field. The hut was extended in 1936 and 1947, and finally, with accommodation for 34, was sold to the University of Canterbury Ski Club in 1954. This hut is still in regular use but is due to be demolished. Shortly after this the Christchurch Ski Club built a larger and more comfortable hut overlooking Phipps Basin. The hut was extended in 1963 and can now provide accommodation for 42 skiers, including separate quarters for instructors and custodians. Paul Pascoe was the architect for the second University Ski Club hut, built in 1965, immediately downhill from the Christchurch Ski Club hut. It has bunks for 26 and from here skis, boots and sticks may be hired. None are available in Arthurs Pass. All three club huts are fully booked during ski schools, (August and September), but during the rest of the ski season, a booking-list for members is held in Christchurch (see p.101 for details).

The Christchurch Ski Club also maintains an eighteen-bunk hut in Arthur's Pass township.

The corrugated iron shed, for many years used by day visitors to the Basin, has now been superseded by the Park Board's new George Lockwood Shelter, built in 1972 and named in honour of a man who was a foundation member of the Christchurch Ski Club and a pioneer of New Zealand ski-mountaineering. The hut commands alpine views on all sides and provides limited cooking, first-aid and ranger patrol facilities. Here skiers may lunch in warmth and comfort, but overnight stays are not permitted. The other day-hut in the area is the Page Hut in the Downhill Basin, built of concrete block in 1970, in memory of a young Christchurch Ski Club member, Fred Page, who died tragically overseas.

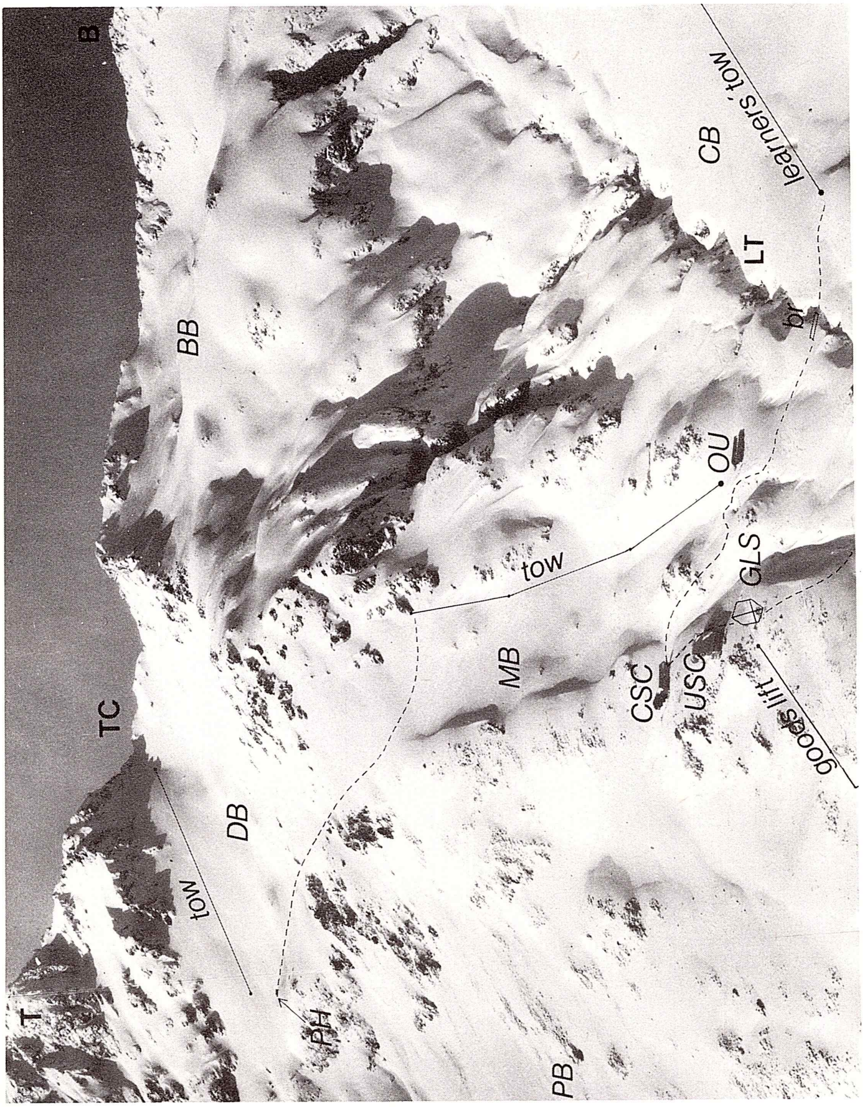
A goodslift was built by the Christchurch Ski Club in 1960, under the guidance of a club member and engineer, Mr Eric Thomas. Built under the subsidy scheme, the lift is owned by the Park Board who license the Christchurch Ski Club to maintain and operate it. The terminus hut for the goodslift is beside the road, west of the Dobson Memorial. The lift has a vertical lift of 446.5 m, is 1400 m in length, and can carry a maximum load of 161 kg. Beside transporting food and fuel to club huts, the lift is available, (before eleven o'clock on most weekends) for the transportation of visitors' packs and skis, for a small charge.

Access to Temple Basin is by metalled road to the Bluffs — almost halfway, and from there by a well-graded foot-track. The road is designed only to take four-wheel-drive vehicles to the Bluffs. Cars are left at the car-park beside the main road and from here to Temple Basin is 1-1½ hours walking time depending on fitness and track conditions. Stout footwear is necessary and children should be accompanied by adults at all times.

In a favourable season three rope tows operate in the Temple Basin area from June to October — on the main ski-field which is relatively narrow and steep and is situated on the flank of a leading ridge between Mt Temple and Mt Cassidy; on the pleasant nursery-slopes of Mt Cassidy; and in the highest and most extensive field, the Down-hill Basin, which fans out from Temple Col. Although its position on the Main Divide puts Temple Basin in the path of nor'west storms, it has a sunnier aspect than most Canterbury ski-fields, which ensures a pleasing variety of snow conditions. A distinctive feature of Temple Basin is its spectacular views — across the valley the snow-covered high peaks of Mts Rolleston and Philistine, down the valley Avalanche and Bealey, and beyond the Otira Gorge the rolling plateau of the Kelly Range and the blue hills of Westland. The many non-skiers who visit the Basin in winter find it well worth the walk.

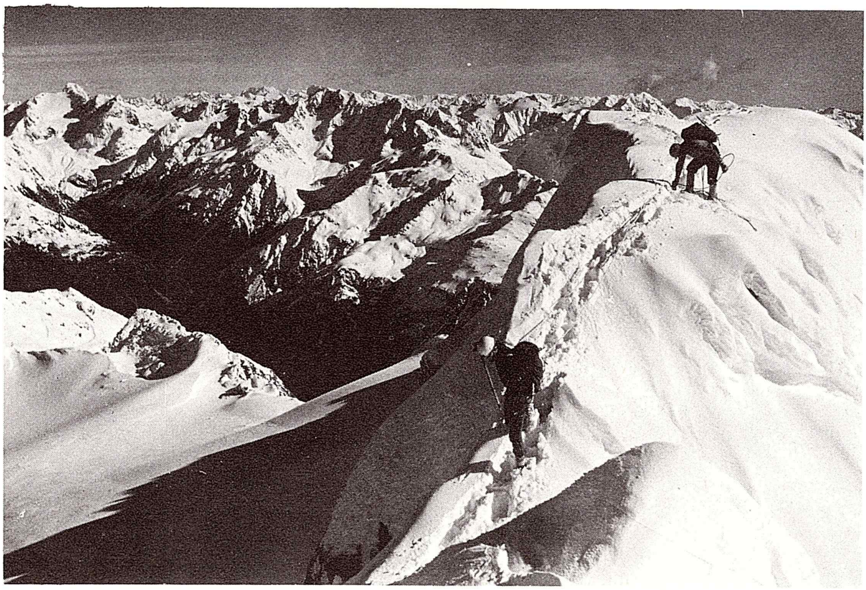
Helicopter lifting timber to build the Casey Hut. J. O. Charles.

Park Board Shelter, Arthurs Pass. C. J. Burrows.

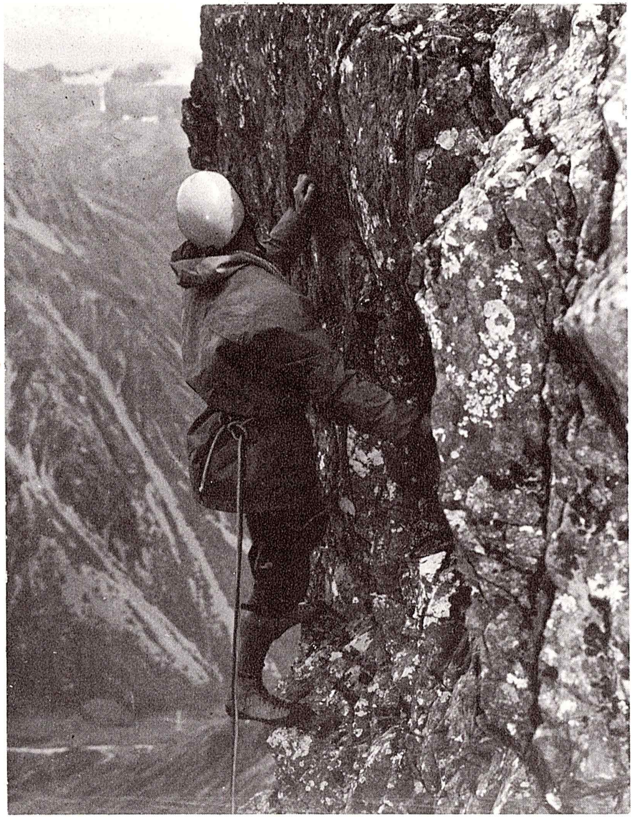


Temple Basin ski field. T Mt. Temple, TC Temple Col, B Mt. B'Limit. DB Downhill Basin, BB B'Limit Basin, PB Phipps Basin, MB Main Basin, CB Cassidy Basin. PH Page Hut (Park Board), C.S.C. Christchurch Ski Club Hut, U.S.C. University Ski Club Hut, O. U. Old University Hut, GLS George Lockwood Shelter (Park Board). LT Lower Twin Creek, br footbridge. V. C. Browne

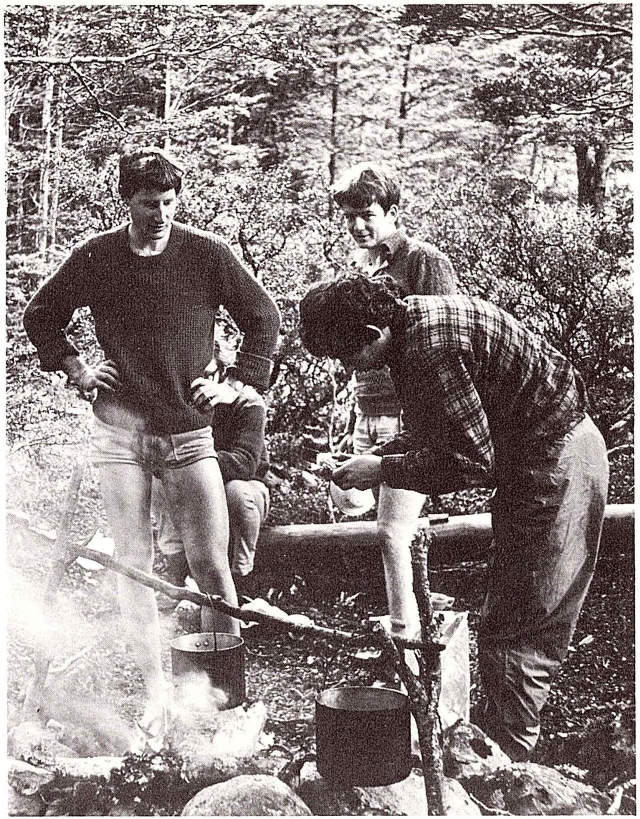
Winter climbing on the Crow face of Mount Rolleston. M. Conway



Climbers on the summit of Mount Rolleston. M. Conway



Rock-climbing above Arthurs Pass. National Publicity Studios



A trampers camp. M. Conway

Most ski-fields have intermittent avalanche danger and Temple Basin is no exception. Intending ski-touring parties should consult the Ski Patrol before setting out on the steeper alpine runs above the main valley. Skiers on the main fields are protected by club officials and the Ski Patrol who strictly enforce safety precautions, and skiers are reminded that all loose hair and clothing should be secured while travelling on tows. The trip-wire which hangs beside the tow-rope, should be pulled if an emergency occurs. Skis should always be attached to boots by safety-straps; a runaway ski can be a lethal object.

Although Temple Basin is the only ski area in the Park served by tows, over the years several ski-mountaineering parties have begun their trans-alpine trips in the upper Waimakariri mountains.

CLIMBING

Climbing is probably the most energetic sport carried on in the Park and ascents of the peaks are made each year by many hundreds of visitors. A wide range of different types of climbing is available. Generally the rock is rotten, but solid slabs are found in such places as the Temple and Speight buttresses or the western flanks of Mt. Rolleston. Many unclimbed routes exist in the upper Waimakariri Valley. Winter conditions or sudden storms make difficult or dangerous such face climbs as the Otira face of Mt. Rolleston or the Crow buttress. Long ridge climbs are to be found and, in winter they can be as exciting as many of the climbs in the Mt. Cook area. Many kinds of snow climbs are available but ice climbs are restricted. The Crow icefall and some of the high peaks in winter are among the few possibilities. The two main climbing clubs with headquarters in the Park are the Canterbury Mountaineering Club and the Canterbury-Westland section of the New Zealand Alpine Club.

Mountaineering in the Park had its beginning when G. E. Mannering, A. M. Ollivier and W. D. Wood climbed the low peak of Mt Rolleston in 1891. Several scientists, including Dr L. Cockayne, the eminent botanist and founder of the Park and the geologist, Professor R. Speight (later an influential figure in the founding of the Canterbury Mountaineering Club), helped to popularize the area but the young, energetic Canterbury and Westland men who were closely involved with the New Zealand Alpine Club and later the Canterbury Mountaineering Club were most active in the earliest days. Some early ascents were: Mt Philistine (A. P. Harper and M. Dixon 1891), Mt Phipps (Mannering, Ollivier and F. H. Polhill 1896), Mt Davie (Harper, E. Harper and G. Dennistoun 1912), Mt Rosamund (F. A. Kitchingham,

C. K. Ward and C. S. Chalk) 1912, Mts Murchison and Harper (Ward and A. G. Talbot), 1913.

The early 1920s were a time of revival of activity; parties had hitherto reached the higher valleys on horseback, bicycle, old car, or on foot but with the completion of the rail link, access became easier. In the University vacations of 1924 and 1925 two young students G. N. Carrington and B. Wyn-Irwin camped at the White R., where Carrington hut now stands, and explored the area. Their enthusiasm for unravelling the topographic problems of the remote mountains, which they translated into words and maps, provided much of the inspiration for the founding of the Canterbury Mountaineering Club and initiated a long tradition of exploring and map-making among its members. R. S. Odell, who compiled the first A.P.N.P. Handbook in 1935, Evan Wilson and John Pascoe were among this large band. The C.M.C. was formed in 1925, but a year later Carrington and a companion were tragically drowned while rafting down the Waimakariri gorge. The impressively buttressed peak Mt Carrington which had been climbed, solo, by a boy of 14, C. Hilgendorf, in 1924, was named soon after. Much activity now took place in searching out the unexplored corners of the area and scaling unclimbed peaks. In 1930 the Canterbury-Westland section of the N.Z. Alpine Club was formed.

Some first ascents and new routes included: Mts Greenlaw and Gizeh (R. E. Clark, J. D. Pascoe, A. G. Flower, 1930), Mt Oates (Pascoe, B. A. Barrer and Miss B. Blunden, 1931), Mt Bowers (C. E. Fenwick and A. Anderson, 1931), Mt Rolleston by the Crow Icefall (E. W. Rich and C. H. Turner, 1934), a traverse Mts Rolleston-Armstrong-Carrington (Rich and J. F. Hayes, 1935) and the Otira Face of Rolleston (W. Barnett, S. Barnett and R. Hewitt, 1936). John Pascoe and Stan Conway climbed the 35 peaks listed in the original handbook, over a period of 20 years, the last of them in 1947.

In the years after the Second World War mountaineering became a more organized sport with a spate of hut-building in village and valleys, instruction courses and, on a national level, the establishment of such bodies as the Search and Rescue Organization, Federated Mountain Clubs and, latterly, the National Mountain Safety Council. Equipment and techniques improved so that climbers began to undertake harder climbs in winter as well as summer. More young women began to take an interest in climbing than formerly. Since the late 1960s, with the advent of even more sophisticated equipment and techniques, there has been a further boost to activity in the mountains especially in winter. One sad result of this has been the increase in fatalities, especially on Mt Rolleston.

Most of the serious search and rescue exercises, involving Park Rangers, volunteer climbers, Police, R.N.Z.A.F., the Amateur Radio Association and others in many days of hard work each year, are caused by climbers who have taken foolish risks. Information about safe procedures is included in the National Mountain Safety Council Handbook No. 3 "Mountaincraft". The main way to avoid trouble is to build up experience about techniques, weather, route-finding, stonefall, avalanche, etc. and to use commonsense in the approach to each climb.

There is not room to include a climbing route guide in this handbook, but is is hoped that a booklet describing routes will soon be available.

TRAMPING

Tramping is a sport, affording its participants companionship and enjoyment of the out-of-doors, which has thrived in the back-country of New Zealand. Arthurs Pass National Park provides a most important section of the tramping country available in the middle South Island and most of the Park users off the beaten track are trampers. A great variety of diverse routes is available. The Christchurch Tramping Club, Canterbury University Tramping Club and several others have affiliations with the Park.

It is hoped that a tramping route guide will soon be available. Meanwhile, refer to map "Arthurs Pass National Park" N.Z.M.S. 194, 4th or later edition. A list of huts and their facilities is given on p102. Safety procedures are outlined briefly in this map and at greater length in the National Mountain Safety Council Handbook No. 1 "Bushcraft".

Trampers and other hut users are requested to use courtesy and commonsense by maintaining a good standard of cleanliness and hut hygiene and by replenishing firewood supplies (from dead trees only).

HUNTING IN THE PARK

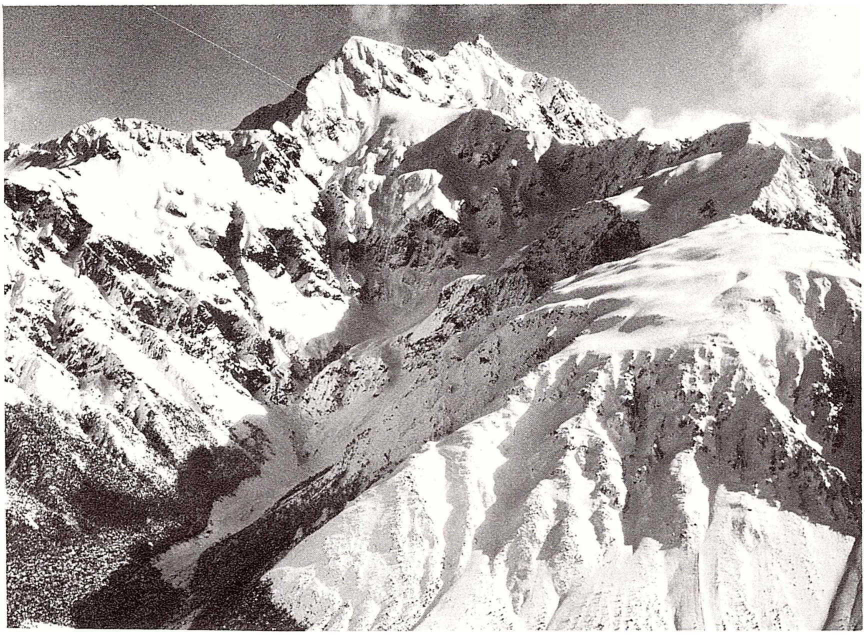
Animals which may be hunted in the Park are red deer, chamois and brush-tailed possums. A combination of N.Z. Forest Service shooting and poisoning campaigns and commercial meat-hunting, especially by helicopters, has reduced the numbers of deer and chamois considerably in recent years. Nevertheless hunters who are prepared to work hard, in the remoter corners of the Park, will still find animals.

All hunting is by permit, and these are obtainable, for specific areas and times, from Park Headquarters. For reasons of public safety no permits are issued in areas near Arthurs Pass during public holidays. Hunting after dark is not permitted and nor are off-road vehicles and horses. Only rifles of calibre greater than 0.22 inches are permitted in the Park.

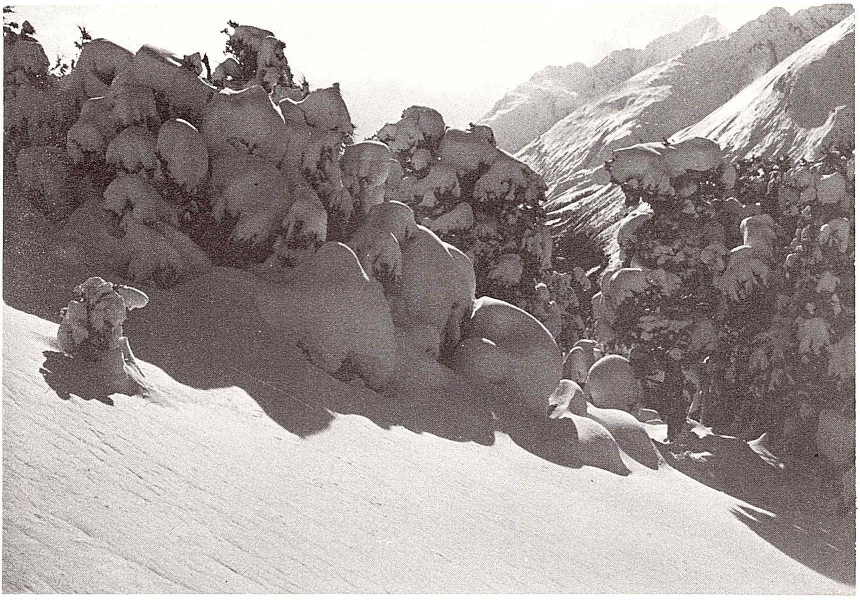
Hunters are urged to use safe procedures. These are outlined in brief on the back of the A.P.N.P. map and fully in the National Mountain Safety Council Manual No. 2 "Firearms and Hunting". In particular, make sure that targets are clearly visible, do not move about with a bullet in the breech of the rifle unless about to fire at game and make sure that the magazine is empty before entering a hut.

Possum-hunting is also subject to issue of permits from the Park Headquarters.

Bog plants. Mountain gentian *(Gentiana bellidifolia)*, alpine cushion *(Phyllachre colensoi)*, prostrate coprosma *(Coprosma pumila)*, dwarf heath *(Pentachondra pumila)*, bladderwort *(Utricularia monanthos)* and pigmy pine *(Dacrydium laxifolium)*. N. M. Adams



Mount Rolleston (2270 m) in winter, from above Temple Basin. V. C. Browne



The bushline on Avalanche Peak after a snowfall. C. J. Burrows

WALKS IN THE BEALEY AND OTIRA VALLEYS

The Bealey Valley in the neighbourhood of the Arthurs Pass Village and the Otira Valley near Otira Township are accessible to many more members of the general public than are the tramping routes throughout the rest of the Park. Accordingly the walks are described here and classified as to degree of difficulty. Refer to the maps (at back of handbook) for details of the routes.

The walks are classified as follows:

(x) Easy short walks with a moderate amount of climbing. The trails are well-marked and bridged but steep bluffs and watercourses are present alongside some of them.

(y) Longer walks requiring greater physical fitness and, in some instances, more climbing but usually the difficulties are not more extreme than those to be met on the short walks except in winter and spring when some of them are subject to considerable snow avalanche danger. Some of the walks are not on regular tracks.

(z) Long walks involving steep climbs. Physical dangers to be met alongside or on the tracks are bluffs, gorges, and the possibility of dislodged stones and, in winter icy rocks, steep snow-covered slopes or unsafe snow conditions. The lower portion of some of these trails (mentioned in text) are suitable for general parties, but the whole route should be attempted only by fit people with adequate gear, including boots, parka, woollen clothing and hats. Inexperienced persons should not attempt them in winter or in bad weather.

SAFETY

In all instances persons walking in the Park should wear adequate clothing and footwear. Travel in parties of two or more. Parents should not let children of less than about 14 years walk even the easy (x) tracks unaccompanied. **NEVER** bowl rocks downhill; there may be someone below. Take great care not to dislodge stones on the steeper tracks for the same reason. Bad weather always increases difficulties and dangers.

Access to some of the tracks, to the summit of Arthurs Pass and the upper Otira valley is from Highway 73 which has no footpath. Be careful to travel on the right-hand side, facing oncoming traffic, preferably in single file.

BEALEY VALLEY

Daisy Flat Track (x) This short track commences on the river side of the highway 1.5 km N. of the township just short of McGraths Ck.

It gives access to a delightful stretch of the Bealey R. where rock walling of the old coach road can be seen edging the grass flat. During the summer months it is an ideal place for a picnic and swim. Time from highway 5 min.

Punchbowl Falls Lookout (**x**) From this lookout, 0.5 km N. of the township and just over Wardens Ck. Bridge, an impressive view of the Punchbowl Falls is seen. Behind the stone seat at the lookout, a short track leads to a view of another small waterfall.

For active persons a 10 min. scramble up the creekbed on the right leads to yet another waterfall. Time from highway to lookout 5 min.

Bealey Footbridge Track (**x**) Gives access to the bridge and Bridal Veil and Punchbowl tracks.

It commences on the river side of the road just north of Wardens Ck. bridge 0.5 km N. of the township, or alternatively from the Bealey R. at the N. end of the village. Time from highway to bridge 5 min.

Punchbowl Falls Track (**x**) After crossing the Bealey footbridge bear right and cross the Punchbowl Stm bridge. Follow the steep zig-zag track to a viewpoint close to the falls.

Warning. It is dangerous to climb the rock faces around the falls or to stand too close to them. The rock is loose and rockfalls often occur. Highway to Falls ¾ hr.

Bridal Veil Walk (**x**) This track is a self-guided nature walk and illustrated pamphlets are available at Park H.Q. It commences at the forest edge immediately after crossing the Bealey footbridge. It provides an interesting walk up the E. side of the Bealey Valley and an alternative to walking up or down the highway.

The graded track traverses through the forest to the Bridal Veil Falls lookout before dropping to the bridge over the Bridal Veil Stm. After climbing out of the creekbed the track continues along the line of power pylons before regaining the highway on the Township side of Jacks Hut. Highway to highway 1 hr.

Upper Bealey Valley Track (**y**) Commences from the car park opposite Jacks Hut, 3 km N. of the township. It is a 10 min. walk to the bridge over the Bealey Chasm. The track now climbs gradually through forest and bog-covered glacial benches to Margarets tarn and a fine view of Mt Rolleston. Avoid walking round the tarn margin which has suffered severe damage from trampling.

A short climb to another bog area follows before the track drops down through forest to the Bealey R. which it follows, before emerging onto the open valley floor. The riverbed is now followed to the gorge where the snow avalanche debris collects off Mt Rolleston.

It is dangerous for inexperienced parties to proceed beyond the gorge and the valley below this is exposed to snow avalanches in winter and spring. Time from highway 1½ hrs.

Temple Basin Track (**y**) The 4-wheel drive track leaves the highway from the car park at Upper Twin Ck. 5 km N. of the Township and zig-zags up to the Bluffs.

From here the foot track continues to Temple Basin, the Ski Club huts and the Public Shelter (at 1200 m).

To reach Downhill Basin the ridge to the left of the tow is followed to gain a benched track leading left to the Page Hut. Care is needed on descending the track above the Bluffs in winter when the snow is hard and icy. Highway to Ski Huts 1½ hrs.

Dobson Walk (**x**) This track is a self-guided nature walk and illustrated pamphlets are available at Park H.Q. It commences on the W. side of the highway opposite the Dobson Memorial, situated just below the summit of the Pass, 5 km from the township.

The track traverses (on board walks) through bog and tussock areas before climbing up onto a moraine ridge overlooking the Otira Valley.

The track now joins the Otira Valley track; a right turn at this junction leads out to the parking area alongside the highway. Time from highway 1 hr.

Upper Otira Valley Track (**y**) One of the most attractive and spectacular walks in the area.

Begin at the car-park just W. of Lake Misery. The track rises over an old moraine then continues at about the same level through scrub and snowgrass, well above the river until it descends to river level where the valley begins to curl round to the

S.W. Inexperienced parties should go no further than this in winter and spring because there is extreme snow avalanche danger in the upper valley. Time from road 1 hr.

In summer, cross the Otira R. by a footbridge and traverse the toe of boulder-strewn avalanche cones and snow patches into the upper basin. The track eventually peters out in the boulders. Inexperienced parties should not travel further than the foot of the Otira Slide. Time from road 2 hrs.

Warnocks Knob (z). From the Knob spectacular views of the Otira Gorge and of the Peaks around Arthurs Pass are obtained. This is a summer trip only for non-mountaineers. Mist may be a problem. Follow the upper Otira Valley track and cross the footbridge over the Otira R. Angle slightly downstream and climb a large scree rising from the river bed to a depression between the Philistine bluffs and Warnocks Knob. Continue east to the prominence at the end of the ridge. The best viewpoint down the Otira Gorge is a large rock overhanging the Otira R. downhill from and just north of the summit. Return the same way as the slopes beneath Warnocks Knob are bluffed and carry thick scrub. Carpark (at highway) to summit 2½ hrs.

Rough Creek Waterfall (y). Travel up the bouldery bed of Rough Ck. Turn up the western tributary which leads to the waterfall (1 hour from road).

Halpin Waterfall (y). Follow the rough bed of Halpin Ck. to foot of fall (½ hr.)

Mt Bealey Track (z) (y to Bushline) The marked track starts at the bush edge at the end of the side road from S. side of Rough Ck bridge.

It climbs steeply through the forest to emerge on the open tussock at approx. 1300 m.

From here the route follows the ridge crest to Mt Bealey (1800 m). A side ridge gives access to other peaks of Mt Bealey on the S. Highway to top of track 1½ hrs, Mt Bealey 3 hrs.

Avalanche Creek Track (z) The track starts behind the Ranger's house at Avalanche Ck. The first 100m is through open beech forest and passes the water pipeline tunnel from the creek. It is an easy route to here. The track now climbs steeply, swinging back and forth to rocky outcrops above the creek where pleasant views of waterfalls and the Bealey valley may be seen. The track climbs steeply through forest and emerges onto open tussock at 1280 m on the crest of the ridge overlooking Rough Ck. The ridge is followed in a N.W. direction to Avalanche Pk. (1720 m).

Warning

It is extremely dangerous to traverse the slopes S. to Rough Ck basin or N. across Avalanche Ck basin to the McGraths Ck ridge in winter. Avalanches occur here frequently. Keep to the ridges for safety but take care to avoid cornices. Highway to Avalanche Pk. 4 hrs.

Scotts Track to Avalanche Peak (z) (y to Bushline). The easier way to Avalanche Pk. is by this track, which commences from the highway 0.5 km N. of the township on the uphill side of the road just beyond the Punchbowl Falls lookout.

The track climbs up forest-covered glacial terraces with fine views of the Bealey Valley and Punchbowl Falls before gaining a forested ridge overlooking McGraths Ck. The ridge is followed to the open tussock at 1200 m then the edge of the precipice into McGraths Ck. is followed up to Avalanche Pk. The track is easy as far as the bushline and is the best route for inexperienced parties who wish to have a high viewpoint of the surrounding area. Highway to Avalanche Pk 4 hrs.

Coral Track to Rome Ridge (z) Coral Track is the forest section of the Rome Ridge climbing route to Mt Rolleston and commences on the uphill side of the road on the first bend in the highway N. of McGraths Ck Bridge.

It climbs very steeply, following a forest-covered spur and emerges onto a steep rubbly face below the crest of the tussock section of the Rome Ridge. Inexperienced parties should not go further. Highway to ridge 1½ hrs.

Mt Aicken Track (z) (y to Bushline). Follow the Punchbowl Falls track to the sign-posted junction and take the right hand track; this continues steeply upwards along the line of the old water pipe that fed a generating station during the Otira tunnel construction.

This pipeline terminated at a line of bluffs level with the lip of the falls and the collapsed rock tunnel can be seen.

The track continues upwards and passes through an open bog area before entering the forest again, finally emerging on the tussock of the ridge leading to Mt Aicken. This is an easy route to the bushline. Highway to ridge 2 hrs.

Cassidy Track (z) Commences on the uphill side of the highway 3 km N. of the township just below Jacks Hut.

The track cuts through a narrow strip of forest to a tussock and scrub-covered glacial terrace which gives access to fine views of the Upper Bridal Veil Falls on the right and is easy to this point.

Access to Mt Cassidy can be gained by following the crest of the bank above the creek then scrambling to the main ridge crest. Otherwise travel to where the bank joins the face then follow a tussock and scrub gully to a basin above the falls. If descending, especially in winter take great care to follow the correct route. Do not glissade down the basin which is deceptively steep and often icy. Highway to terrace ½ hr; to Mt Cassidy 3 hrs.

Con's Track to Mts Cassidy and B'Limit (z) Commences on the uphill side of the Punchbowl Track, between the Bealey and Punchbowl footbridges.

It climbs steeply to reach the open tussock above the scree slide falling to the N.W. of the Punchbowl Falls. Continue along the broken ridge to Mt Cassidy and then Mt B'Limit. Take care to avoid snow cornices on the ridges in winter.

OTIRA VALLEY

Access is from highway 73 or the Aickens or Otira railway stations.

Kelly Creek Shelter — Kelly Range (z) **(First part, to hut, y)** This is one of the most pleasant walks in the Park. Follow a well-defined track up the bush-covered fan of the first side-stream upstream from the shelter on the N. The track zig-zags onto a ridge, which it follows before veering N. to climb steeply out of the bush. It then traverses W. through the subalpine scrub to emerge at the rim of the Kelly Range plateau (2½ hrs). 15 mins. further on is the Carroll hut (A.P.N.P., 6 bunk). The route is easy to here. From here trips along the range to N.E. or S.W. are possible. The Kelly Ra. is peculiarly susceptible to fog and considerable care is needed in route-finding under these circumstances. Shelter to hut 2¾ hrs.

Kelly Creek Shelter — Hunts Saddle (z) The marked track starts across the first side creek upstream of the shelter on the N. Follow the track for 30 mins. climb over a gorge, then back to the stream. Continue for another hour until the stream swings S.W. towards Mt Barron. The track starts again 8 m. up a bank on the N. Proceed for an hour up to the open, boggy Hunts Saddle. Shelter to saddle 3½ hrs.

Otira — Mt Barron (z) Two tracks lead to the slopes of Mt Barron. The entrance to one leaves highway 73 between Goat Ck and the Otira Police station. This track follows the pipes which carry the township's water supply and emerges on the open tops on the lower grassy slopes of Mt Barron. Highway to bushline 2½ hrs.

The second track leaves the main road in a more southerly direction between Goat Ck. and the Otira road bridge. This track leads to a trig used by tunnel surveyors and emerges from the bush onto the lower slopes of Mt Barron. Various routes can then be followed to the peak. Highway to bushline 2½ hrs.

Barrack Creek — Goat Hill (z) A track leading to the bushline on Goat Hill can be found on the N. side of Barrack Ck. about 200 m. up from the Otira-Barrack Ck. confluence. The track climbs steeply up a leading ridge until the open tops are reached at the S. end of Goat Hill. Highway to bushline 2½ hrs.

ACCOMMODATION

ARTHURS PASS TOWNSHIP

Organization	No. of Beds	Bookings or Inquiries
Christchurch Ski Club	18	Sec., Box 2493, Christchurch.
Christchurch Tramping Club	21	Sec., Box 1948, Christchurch.
Canterbury Mountaineering Club	18	Sec., Box 2415, Christchurch.
New Zealand Alpine Club	34	Sec., Box 1700, Christchurch.
University of Canterbury Students Association	18	Sec., Steeds Hut Committee, Students Union, Ilam, Christchurch 4. Ph. 487-069.
West Coast Alpine Club	12	Sec., Box 136, Greymouth
Youth Hostel Association	48	Sec., Box 1555, Christchurch. Ph. 77-623.
Youth Hostel Motel	8	Sec., Box 1555, Christchurch, Ph. 77-623
Alpine Motels	20	Ph. 39-085, Christchurch, 937 Z Arthurs Pass.
Arthurs Pass Outdoor Education Centre	40	Sec., A.P.O.E.C., Canterbury Education Board, Box 2610, Christchurch, Ph. 65-239
Christchurch Teachers College	20	Dovedale Avenue, Ilam, Christchurch, 4.

Some private cottages may be rented. Inquiries J. Ackland, Storekeeper Phone 937S, Arthurs Pass or J. Charles, Senior Ranger, 937A

TEMPLE BASIN

Christchurch Ski Club	42	Sec., Box 2493, Christchurch.
University of Canterbury Ski Club	34 (old hut) 26 (new hut)	Sec., Students Union, Private Bag, Christchurch

Booking list for members: Snowline Sports Depot, 250 Oxford Terrace, Christchurch.

HAWDON

Christchurch Boys High School	40	Kidson House Committee Straven Road, Christchurch.

PARK BOARD SHELTERS

Arthurs Pass	Arthurs Pass Township
Greyneys	Greyneys Ck, Bealey R.
Klondyke	Klondyke Corner
Andrews	Andrews R.
Hawdon	Hawdon R.
Kellys Ck	Kellys Ck

As the name suggests these buildings are intended only for temporary occupation. They have a stove or fireplace and benches.

HUTS IN MORE REMOTE PARTS OF THE PARK

Small huts and bivouacs are not listed. They have two bunks, a large common bunk or no bunks.
Hut fees are payable for the use of Club and Park Board huts.

HUT	LOCATION	CONTROLLED BY	BUNKS	INQUIRIES
Barker	White Glacier	C.M.C.	6	Box 2415, Christchurch.
Waimakariri Falls	Waimakariri Falls	C.M.C.	4	
Carrington	White R.-Waimakariri confluence	C.M.C.	18	
Anticrow	Anticrow Ck.	C.M.C.	12	
Greenlaw	Greenlaw Ck.	N.Z.A.C.	15	Box 1700, Christchurch.
Crow	Upper Crow R.	N.Z.A.C.	12	
Edwards	Upper Edwards R.	A.P.N.P.	16	Chief Ranger, A.P.N.P. or Sec., Dept of Lands & Survey Private Bag Ch.Ch., Phone 62-649.
Goat Pass	Goat Pass	A.P.N.P.	20	
Hawdon	Upper W. Hawdon R.	A.P.N.P.	16	
Casey	Casey Stm	A.P.N.P.	16	
Carroll	Kelly Range	A.P.N.P.	9	
Worseley	Upper Poulter R.	A.P.N.P.	4	
Locke Stm	Locke Stm, Taramakau	A.P.N.P.	18	
Upper Deception	Upper Deception R.	N.Z.F.S.	6	Westland Conservancy, Hokitika.
Mid Deception	Middle Deception R.	N.Z.F.S.	4	
Trust	Poulter-Thompson R. Confluence	N.Z.F.S.	6	Christchurch Conservancy Canterbury.

In keeping with the concept of wilderness no information is provided about the New Zealand Forest Service Huts in the Otehake Wilderness area.

FACTS AND FIGURES

Area of Arthurs Pass National Park (January 1974) 98,377 ha (243,148 acres)
Area in Westland approx. 1/3 total area.
Area in Canterbury approx. 2/3 total area.

Altitude of Arthurs Pass	920 m	
Altitude of Harpers Pass	960 m	
Altitude of Arthurs Pass Village	737 m	
Altitude of Otira township	384 m	
Peaks over 2000 m:		
Mount Murchison	2400 m	
Mount Davey	2293 m	
Mount Wakeman	2286 m	
Mount Rolleston	2270 m	
Mount Harper	2240 m	
Mount Isobel	2194 m	
Mount Gizeh	2164 m	
Mount Speight	2118 m	
Mount Lancelot	2106 m	
Mount Armstrong	2103 m	
Mount Franklin	2087 m	
Mount Guinevere	2034 m	
Mount Carrington	2026 m	
Mount Damfool	2026 m	
Cow Peak	2017 m	
Mount Oates	2008 m	
Lowest point on Canterbury side	548 m	(Poulter — Cox confluence)
Lowest point on Westland side	243 m	(Otira — Taramakau confluence)
Distance Arthurs Pass — Otira	14.5 km	
Distance Arthurs Pass — Christchurch	153.0 km	
Distance Arthurs Pass — Greymouth	98.0 km	
Distance Arthurs Pass — Hokitika	103 km	
Length of Otira Tunnel	8.5 km	
Altitude of western tunnel portal	483 m	
Altitude of eastern tunnel portal	742 m	
Grade 1 in 33 (30 cm/10 m)		
Clear height of tunnel	4.7 m	
Maximum width of tunnel	4.5 m	

Metric Conversions

1 km = 0.621 miles
1 m = 3.28 feet
1 ha = 2.471 acres
1 mile = 1.6093 km
1 foot = 0.3048 m
1 acre = 0.4046 ha
1 inch = 2.54 cm

ACKNOWLEDGMENTS

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Grateful acknowledgement is made of the willing assistance provided by all of these individuals and organisations.

PARK BY-LAWS

This Park belongs, in perpetuity, to the people of New Zealand. Visitors are enjoined to observe the following code of behaviour.

1. All birds, native animals, plants and natural features are protected and no specimens may be taken without authority from the Park Board.
2. Fires may not be lit without authority, except at camping sites and picnic areas. All fires should be in safe places and must be properly extinguished. Use only dead wood for fuel.
3. Place rubbish in containers, where provided, otherwise burn or bury.
4. Camp sites, picnic areas and huts should be left clean and tidy, with firewood replenished.
5. Dogs and cats may not be brought into the Park without authority.
6. Firearms may not be taken into the Park without authority.

Offences against these by-laws may lead to prosecution.

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Back Cover:

The large mountain dragonfly *(Uropetala chiltoni).* V. L. Burrows